

Exhibit

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PohlmanUSA®
Court Reporting and
Litigation Services

Dr. Howard Hu - Volume I

August 31, 2020

Marc Czapla and Jill Czapla v. Republic Services,
Inc., et al.

IN THE CIRCUIT COURT OF ST. LOUIS COUNTY
STATE OF MISSOURI

MARC CZAPLA AND JILL)
CZAPLA,)
)
 PLAINTIFFS,)
)
 vs.) Case No. 18SL-CC00803-01
) Division 4
 REPUBLIC SERVICES, INC.,)
 ET AL.,)
)
 DEFENDANTS.)

BRIDGETON LANDFILL, LLC,)
)
 THIRD-PARTY)
 PLAINTIFF,)
)
 vs.)
)
 COTTER CORPORATION, N.S.L.,)
)
 THIRD-PARTY)
 DEFENDANT.)

VIDEOTAPED REMOTE VIDEO CONFERENCING DEPOSITION OF DR.
 HOWARD HU
 TAKEN ON BEHALF OF THE DEFENDANTS
 AUGUST 31, 2020

Angela M. Taylor, RPR, IL-CSR, MO-CCR
CSR No. 084.004538
CCR No. 1067

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10 BRIDGETON LANDFILL, LLC,)
11 THIRD-PARTY)
12 PLAINTIFF,)
13 vs.)
14 COTTER CORPORATION, N.S.L.,)
15 THIRD-PARTY)
16 DEFENDANT.)

18 VIDEOTAPED VIDEO CONFERENCING REMOTE
19 DEPOSITION OF DR. HOWARD HU, produced, sworn, and
examined on behalf of Defendants, AUGUST 31, 2020,
between the hours of 11:21 in the forenoon and 2:55 in
20 the afternoon of that day, video conferencing and
telephonically remotely, before Angela M. Taylor, RPR,
21 MO-CCR, IL-CSR.

22 APPAREANCES

23 Attended Telephonically: Mr. William G. Beck of
Lathrop GPM LLP, 2345 Grand Boulevard Suite 2200,
24 Kansas City, MO 64108 represented Defendants.

1 APPEARANCES (CONT'D)

2 Attended Telephonically: Mr. Jonathan M. Soper of
3 Humphrey, Farrington & McClain, P.C., 221 West
Lexington Suite 400, Independence, MO 64050
represented Plaintiffs.

4 Attended Telephonically: Mr. Brian O'Connor Watson of
5 Riley Safer Holmes & Cancila, LLP, 70 West Madison
Street Three First National Plaza Suite 2900, Chicago,
6 IL 60602 represented Third-Party Defendant Cotter
Corporation (N.S.L.).

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1 IT IS HEREBY STIPULATED AND AGREED by and
2 between counsel for the PLAINTIFFS and counsel for the
3 DEFENDANTS, that this deposition may be taken in
4 shorthand by Angela M. Taylor, a Registered
5 Professional Reporter, Certified Shorthand Reporter
6 and Certified Court Reporter, and afterwards
7 transcribed into typewriting, and the signature of the
8 witness is reserved by agreement of counsel and the
9 witness.

10

11 0-0-0

12

13 VIDEOGRAPHER: We are on the record. This
14 is the videotaped deposition of Howard Hu. Today's
15 date is August 31st, 2020, and the time is 11:21 a.m.
16 this is in the case of Marc Czapla and Jill Czapla
17 versus Republic Services Incorporated, et al. Case
18 No. 18SL-CC0080301 pending In The Circuit Court of
19 St. Louis County, State of Missouri.

20 My name is Matthew Schnorf, the
21 videographer. The court reporter is Angela Taylor.
22 We are both with Pohlman USA Court Reporting.

23 Counselors, will you please state your
24 appearance?

25 MR. SOPER: Jonathan Soper for the

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1 plaintiffs.

2 MR. BECK: Bill Beck for the defendant.

3 MR. WATSON: Brian Watson on behalf of
4 third-party defendant, Cotter.

5 VIDEOGRAPHER: And will the court reporter
6 please swear in the witness?

7 DR. HOWARD HU,
8 of lawful age, being produced, sworn and examined on
9 the part of the Defendants, and after responding "Yes,
10 I do" to the oath administered by the court reporter,
11 deposes and says:

12

13 * * * * *

14

15 [EXAMINATION]

16 QUESTIONS BY MR. BECK:

17 Q Good morning, Dr. Hu. My name is Bill Beck.
18 We met very briefly in Seattle about a year ago, but I
19 don't expect you to remember that. I would appreciate
20 it if you would simply pronounce your last name so I
21 don't do it wrong.

22 A Sure. It's Hu, and can I just start off
23 apologizing now for the technical delay, but I had an
24 emergency dental procedure this morning. So if I'm
25 slurring some of my words a little bit with a mouthful

EXAMINATION BY MR. BECK

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1 **of Novocaine, just ask me to repeat it and I'll do the**
2 **best I can.**

3 Q We will and thank you for that.

4 And what are you understanding to be the
5 correct pronunciation of the plaintiff's last name?

6 **A Czapla, I believe.**

7 Q Thank you. Have you met Marc Czapla --

8 **A No.**

9 Q -- in person?

10 **A No.**

11 Q Have you spoken with him either by video or
12 over the phone?

13 **A No.**

14 Q I take it you would never have actually
15 conducted any sort of physical examination on Marc
16 Czapla?

17 **A I could have, but I didn't. I was not asked**
18 **to do so.**

19 Q Did you order any tests to be performed on
20 Marc Czapla?

21 **A No.**

22 Q You have reviewed some medical records;
23 correct?

24 **A Yes.**

25 Q And I'm going to refer to my paralegal

EXAMINATION BY MR. BECK

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1 Melissa Love as Melissa because that's what I call her
2 all the time. She's going to project the documents
3 because I'm completely technically lacking.

4 MR. BECK: So Melissa, could you draw up
5 Exhibit 1, please?

6 Q (By Mr. Beck) Dr. Hu, I understand you've
7 been trained in how to use, unfortunately, our pandemic
8 resource of Adobe Connect to be able to navigate in the
9 document. Do you know how to do that?

10 A I don't believe I have control of the
11 navigation. I think you guys would have to do that or
12 somebody would.

13 Q All right. Well, we'll get you to the right
14 page, and if you can't see something, let us know and
15 we'll try to figure that out.

16 A Okay.

17 Q In paragraph 1 of Exhibit 1, your report,
18 you start out by saying -- it's addressing Mr. Soper
19 first, correct?

20 (Exhibit 1 was previously marked and
21 now identified for the record.)

22 A **Correct.**

23 Q (By Mr. Beck) It says that you are writing in
24 response to his request for a medical evaluation of
25 Dr. -- Dr. Marc Czapla with respect to the potential

1 impacts of the exposures to radionuclides he may have
2 experienced in association with the Westlake Landfill
3 site on his subsequent development of cancer and any
4 other adverse health outcomes. Have I read that
5 accurately?

6 **A Yes.**

7 Q And in order to provide that evaluation, you
8 have some medical records that you were provided by
9 Jonathan Soper as one item, correct?

10 **A Correct.**

11 Q You also asked that Mr. Czapla prepare and
12 provide to you a cancer history questionnaire so you
13 can see what his -- his cancer history would be?

14 **A Yes.**

15 Q As you reviewed the notes -- or I'm sorry,
16 as you reviewed the medical records that you were
17 provided, you actually took some notes yourself for
18 reference?

19 **A Yes.**

20 Q You were provided a dose calculation report
21 prepared by Dr. James Clark. You were given that by
22 Mr. Soper, correct?

23 **A Correct.**

24 Q And you conducted some literature review and
25 provided some literature together with your report; is

EXAMINATION BY MR. BECK

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1 that right?

2 **A Correct.**

3 MR. BECK: And Melissa, if we could go over
4 to page 2, in the last paragraph which then carries
5 over to page 3.

6 Q (By Mr. Beck) I've skipped a portion, Dr. Hu,
7 but I'll come back.

8 You've got a section that starts out with
9 the words this evaluation, in order to conduct this
10 expert medical evaluation, I reviewed and relied upon
11 the following documents and reports and then there's a
12 brief list; is that accurate?

13 **A Yes.**

14 Q The first item on the list is a series of
15 medical records, and of those medical records the
16 first one that you reviewed were from the Baylor
17 College of Medicine Ambulatory Service; is that right?

18 **A Correct.**

19 Q Melissa's going to pull up Exhibit 4 which
20 was one of the sets of medical records produced to us
21 by Mr. Soper as the ones you had reviewed. I'd ask
22 you to just check Exhibit 4 and make sure that is --
23 that appears and so that we're -- we -- we have to
24 struggle with the means of taking your deposition
25 because of the pandemic, but does that appear to be

EXAMINATION BY MR. BECK

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1 the set of Baylor College of Medical -- I'm sorry,
2 College of Medicine Ambulatory Service records that
3 you reviewed and relied on?

4 (Exhibit 4 was previously marked and
5 now identified for the record.)

6 **A Yes.**

7 Q (By Mr. Beck) Thank you. I'm going to go
8 back and just read to you from Exhibit 1 in the same
9 bullet. The next medical services provider records it
10 says you reviewed are Baylor Clinic Section of
11 oncology/hematology. And I'll ask Melissa to put up
12 Exhibit 5, and, Dr. Hu, the question is do those appear
13 to be the records that you reviewed from that provider?

14 (Exhibit 5 was previously marked and
15 now identified for the record.)

16 **A In general, yes.**

17 Q (By Mr. Beck) Okay. I'm going to assume
18 they're the accurate set because they were provided by
19 Mr. Soper. The next set is excerpts of MD Anderson
20 Cancer Center medical records, and I'll ask Melissa to
21 put up Exhibit 6 and see if you can tell us if that's
22 what those appear to be, the ones that you reviewed and
23 relied on?

24 (Exhibit 6 was previously marked and
25 now identified for the record.)

EXAMINATION BY MR. BECK

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1 A Yes.

2 Q (By Mr. Beck) Thank you. The next is Tulane
3 University Hospital and Clinic. And I'll ask Melissa
4 to project Exhibit 7, Dr. Hu, so can tell us do those
5 appear to be the records of Tulane Hospital and Clinic
6 for Mr. Czapla that you reviewed and relied upon?

7 (Exhibit 7 was previously marked and
8 now identified for the record.)

9 A Yes.

10 Q (By Mr. Beck) The next one is University of
11 Missouri-Columbia Hospital and Clinic medical records,
12 and I'll ask Melissa to project Exhibit 8. And the
13 question, Dr. Hu, is does Exhibit 8 appear to be the
14 records of University of Missouri-Columbia Hospital and
15 Clinic that you reviewed and relied upon regarding
16 Mr. Czapla?

17 (Exhibit 8 was previously marked and
18 now identified for the record.)

19 A Can you -- can the -- yeah, can you scroll a
20 little more? Keep going. I think so. It is a little
21 vague, but I think that's consistent with what I
22 reviewed.

23 Q (By Mr. Beck) All right. Thank you. You did
24 provide or -- or informed Mr. Soper of which records
25 you had reviewed so that he could produce an accurate

EXAMINATION BY MR. BECK

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1 set; is that right?

2 **A Yeah. I mean, it's in the report.**

3 Q Sure. And then the last of the medical
4 records, I got excerpts of UT Physicians' records, and
5 I'll ask Melissa to project Exhibit 9, and, Dr. Hu,
6 the question again is do these appear to be the
7 records of UT Physicians in Houston that you reviewed
8 and relied upon?

9 (Exhibit 9 was previously marked and
10 now identified for the record.)

11 **A Yes.**

12 Q (By Mr. Beck) And so far as you know, is that
13 all of the medical records of Mr. Czapla that you have
14 reviewed?

15 **A I believe so.**

16 Q Are there any med -- medical records for
17 Mr. Czapla that you have reviewed that cover his life
18 prior to -- let me say that a better way.

19 Dr. Hu, are there any medical records for
20 Mr. Czapla that you have reviewed that are dated
21 before 2006?

22 **A Not that I recall.**

23 Q And you know that the alleged exposure in
24 this case is said to have occurred between the years
25 of 1973 and 1978, do you not?

EXAMINATION BY MR. BECK

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1 **A Correct.**

2 **Q**Did you request any records that were more
3 contemporaneous to the time frame 1973 to 1978?

4 **A Not specifically. I assumed that I was**
5 **given the records that are relevant to this case.**

6 **Q**But you didn't make any requests for any
7 medical records, though, other than what counsel
8 handed you?

9 **A Correct.**

10 **Q**Now, going back to Exhibit 1.

11 **MR. BECK:**Melissa, if you can go back to
12 that same list on page 2 carrying over to the top of
13 page 3 to the second bullet about the questionnaire.

14 **Q**(By Mr. Beck) Dr. Hu, is it correct --

15 **A I'm sorry.**

16 **Q**I'm sorry?

17 **A I'm sorry. I -- I need to correct myself.**
18 **I did ask counselor whether there's any records of**
19 **diagnostic x-rays taken prior to 2006.**

20 **Q**And why did you want to know that?

21 **A Just so I can understand what other**
22 **radiation exposure Mr. Czapla might have had.**

23 **Q**Is an x-ray ionizing radiation?

24 **A Yes.**

25 **Q**Would a CT scan be ionizing radiation?

EXAMINATION BY MR. BECK

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1 **A Yes.**

2 **Q**Would an MRI be ionizing radiation?

3 **A No.**

4 **Q**Now, let's go back into Exhibit 1, please,
5 if we could, on page 2 carrying over to the top of
6 page 3. The second bullet refers to a questionnaire.

7 **MR. BECK:**Melissa, do you have that
8 projected?

9 **MS. LOVE:**Do you want the questionnaire,
10 Bill?

11 **MR. BECK:**No. I just want you to put up
12 Exhibit 1 note the bullet?

13 **MS. LOVE:**Yes.

14 **MR. BECK:**Thank you.

15 **Q**(By Mr. Beck) Dr. Hu, the next thing that you
16 received and reviewed and relied on to write your
17 report Exhibit 1 is a questionnaire that was filled out
18 by Marc Czapla?

19 **A Correct.**

20 **MR. BECK:**And, Melissa, if you could
21 project Exhibit 10 so that we can have Dr. Hu identify
22 that questionnaire, if he can. And let me know when
23 it's showing, please, because I can't see the screen.

24 **MS. LOVE:**It's showing, Bill.

25 **MR. BECK:**Thanks.

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1 Q (By Mr. Beck) Dr. Hu, is Exhibit 10 the
2 family cancer history questionnaire that you received
3 from Marc Czapla and relied on to write your report?

4 (Exhibit 10 was previously marked and
5 now identified for the record.)

6 A **I believe so.**

7 Q (By Mr. Beck) Thank you.

8 MR. BECK: Going back to Exhibit 1, Melissa,
9 to the third bullet.

10 Q (By Mr. Beck) Dr. Hu, the third bullet in the
11 list of things that you reviewed and relied upon is a
12 transcript of Marc Czapla's deposition given June 24,
13 2020. Do you see that bullet?

14 A **I do.**

15 MR. BECK: And, Melissa, if you could,
16 project Exhibit -- I believe it's 13, and let me know
17 when it's up.

18 MS. LOVE: It's up.

19 MR. BECK: Thank you.

20 Q (By Mr. Beck) And, Dr. Hu, the report said
21 June 24th. The deposition were projecting actually
22 says July 24, 2020, but with that correction, is
23 Exhibit 13 the deposition of Marc Czapla that you
24 reviewed and relied upon in writing your report?

25 (Exhibit 13 was previously marked and

EXAMINATION BY MR. BECK

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1 now identified for the record.)

2 **A I believe so.**

3 **Q** (By Mr. Beck) Thank you.

4 MR. BECK: Melissa, if you can go back to
5 the bullet list in Exhibit 1 now, please, the final
6 item.

7 MS. LOVE: I'm there, Bill.

8 MR. BECK: Thank you.

9 **Q** (By Mr. Beck) Dr. Hu, could you look at
10 Exhibit 15 and see if that appears to be the exposure
11 assessment conducted by Clark and Associates
12 Environmental Consulting, Inc. and dated April 16,
13 2020, that you reviewed?

14 MR. SOPER: August 16, Bill.

15 MR. BECK: I'm sorry. Thank you for that
16 correction.

17 **Q** (By Mr. Beck) Is it -- Is that what it is
18 with that correction, Dr. Hu?

19 (Exhibit 15 was previously marked and
20 now identified for the record.)

21 **A Yes.**

22 **Q** (By Mr. Beck) And are those all of the items
23 that you were given about this case to review and rely
24 upon in preparing this report apart from your own
25 knowledge and literature review?

EXAMINATION BY MR. BECK

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1 **A Yes.**

2 **Q**Did you at any time speak with Jill Czapla,
3 the other plaintiff?

4 **A No.**

5 **Q**Did you at any time speak with Dr. James
6 J.J. Clark who wrote Exhibit 15 with respect to this
7 case?

8 **A No.**

9 **Q**Did you review the deposition recently given
10 by Dr. Clark concerning his own exposure assessment?

11 **A Yes.**

12 **Q**So that is another item that you reviewed at
13 his deposition testimony?

14 **A Yes. It was actually after I finished my
15 report so it was very recently.**

16 **Q**All right. And other than the deposition
17 testimony of James Clark, is there anything else that
18 would amend the list of items that you reviewed and
19 relied upon to prepare your own report?

20 **A No.**

21 **MR. BECK:** Now, if we could project Exhibit
22 11, please, Melissa.

23 **MS. LOVE:** It's there, Bill.

24 **MR. BECK:** Thank you.

25 **Q**(By Mr. Beck) Dr. Hu, is this a set of notes

EXAMINATION BY MR. BECK

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1 that you prepared as you reviewed the medical records
2 of Marc Czapla prior to writing your report?

3 (Exhibit 11 was previously marked and
4 now identified for the record.)

5 **A Yes.**

6 Q (By Mr. Beck) Thank you.

7 MR. BECK: And if we can go back to Exhibit
8 1 and go to the same spot, should be top of page 3 by
9 now right after the fourth bullet.

10 MS. LOVE: We're there, Bill.

11 MR. BECK: Thank you.

12 Q (By Mr. Beck) Dr. Hu, you then say in
13 addition, I relied upon the peer-reviewed scientific
14 literature that, in my opinion, is the most rigorous
15 and relevant to the issues inherent in this evaluation.
16 As appropriate, such evidence will be cited during the
17 course of this report. Have I read that accurately?

18 **A Yes.**

19 Q And is that literature, in fact, cited
20 within the report generally within footnotes?

21 **A Yes.**

22 Q And did you provide copies of that
23 literature to Mr. Soper so that they can be produced
24 to this deposition together with your report?

25 **A Yes.**

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1 MR. BECK: Melissa, if I can ask you to
2 project Exhibit 1 and go to page 4 at the top first
3 partial paragraph.

4 MS. LOVE: We're there, Bill.

5 Q (By Mr. Beck) Dr. Hu, you refer in your
6 report in this paragraph to an operation that Marc
7 Czapla had; is that correct?

8 A **Yes.**

9 Q Was that the operation that occurred on
10 February 12, 2013?

11 A **I don't remember the date, but I can look at
12 my copy of the report that I have in my hand, so if
13 you don't mind --**

14 Q That would be fine.

15 A **Okay.**

16 Q And I do want you to feel free to consult
17 your report any time you need to to give good answers.

18 A **Okay. Thank you. Yes, the operation
19 occurred, as far as I know from review of medical
20 records, on February 12th, 2013.**

21 Q And so was a tumor found in one of
22 Mr. Czapla's kidneys and removed?

23 A **Yes.**

24 Q Did it appear to you from the operative
25 reports and other materials that the surgeon was able

EXAMINATION BY MR. BECK

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1 to attain these margins?

2 **A Yes.**

3 Q Was there also a biopsy taken from the other
4 kidney in order to determine whether it had cancer
5 cells present?

6 A I'm not sure what was done to determine if
7 it was cancer or not, but a biopsy was taken of the
8 other kidney.

9 Q And all -- a biopsy was taken of the
10 non-cancerous kidney, and one of the things that it
11 revealed was interstitial fibrosis; is that correct?

12 A **Correct.**

13 Q What is interstitial fibrosis?

14 A **It's basically some scarring.**

15 Q Is it a formation of fibrous tissue?

16 A **Yes.**

17 Q And what causes kidney scarring or this
18 interstitial fibrosis?

19 A **Well, there's a whole long list of things,**
20 **but in the presence also of the calcification, I think**
21 **one of the questions is whether this might have been**
22 **related to an early kidney stone, but, you know,**
23 **there's a whole long list of things that can cause**
24 **that, infection, connective tissue disorders, et**
25 **cetera.**

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1 Q If a patient were to regularly take
2 substantial amounts of nonsteroidal anti-inflammatory
3 drugs, could that cause interstitial fibrosis of the
4 kidneys?

5 A Well, I'm not sure that anti-inflammatories
6 do interfere with --

7 (The phone line cut out, and the court
8 reporter asked for clarification.)

9 A Yeah, let me just revise that. So the
10 question was -- I'm sorry. Can you repeat the
11 question, Counselor?

12 Q (By Mr. Beck) Sure. Can we have an acronym
13 for a nonsteroidal anti-inflammatory drug? How do you
14 pronounce it? NSAID?

15 **A NSAIDs.**

16 Q NSAID. Can NSAIDs cause interstitial
17 fibrosis of the kidney?

18 A I'm not sure. I think I'd have to go back
19 to my literature sources to check on that.

Q Can NSAIDs cause chronic kidney disease?

21 A They can definitely cause some kidney
22 malfunction, whether it can actually result in chronic
23 renal failure is debatable.

24 Q When you reviewed the medical record that
25 created your notes, do you recall, first of all, when

EXAMINATION BY MR. BECK

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1 that was?

2 **A When what was?**

3 Q When did you review the medical records and
4 create the notes I showed you that were marked as
5 Exhibit 11?

6 **A Some time in the last two or three weeks.**

7 Q Thank you. When you reviewed the medical
8 records, did you look, among other things, for
9 evidence that Mr. Czapla was taking or had taken
10 frequent NSAIDs?

11 **A I do recall there was some evidence of that.**

12 Q And was that remarkable to you for any
13 reason?

14 **A Well, as far as I know, NSAIDs are not a
15 risk for renal cell carcinoma, so no.**

16 Q Radiation aside, what are some of the risks
17 for renal cell carcinoma? Or let's say radioactivity.

18 **A Yeah. Smoking is one. There's a number of
19 familiar -- familial hereditary cancers that are
20 another risk factor. There are some other conditions
21 that are associated with, although the causal
22 mechanistic pathway is unclear. Things like obesity
23 and hypertension.**

24 Q What about diabetes?

25 **A Well, that's part of the metabolic syndrome**

EXAMINATION BY MR. BECK

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1 complex which has been associated with a somewhat
2 elevated risk in some studies along with obesity.

3 Q Any other risk factors for renal cell
4 carcinoma, radioactivity aside, aside the ones you
5 listed that are relevant to this case?

6 A There have been some chemicals that have
7 been associated with elevated risk of kidney cancer
8 like trichlorethylene. And then, of course, even
9 without any of the known hereditary familial cancers
10 like Cowden syndrome, just having a family history of
11 kidney cancer is a risk factor.

12 Q Did you look up the background incidence of
13 kidney cancer to come up with a value for that?

14 A I have it somewhere. I didn't quote it in
15 this report. You're talking about the lifetime risk
16 of developing kidney cancer?

17 Q Yes.

18 A Yeah, I can't -- I come across that
19 statistic, but I can't remember right now. Something
20 like one out of 42 or 45, something like that.

21 Q One out of 42 or 45?

22 A Yeah, I'm just speculating right now because
23 I can't remember the exact number.

24 Q And if you wanted to look it up and confirm
25 it, where would you look?

EXAMINATION BY MR. BECK

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1 **A I would either look at any of my textbooks**
2 **by Harrison Principles of Internal Medicine or**
3 **American Cancer Society website or something like**
4 **that.**

5 **Q And among -- well, let -- let's go back to**
6 **one of the risk factors that you mentioned for renal**
7 **cell carcinoma and that is exposure to**
8 **trichlorethylene or TCE. Is it correct that TCE has**
9 **been historically a frequently used solvent not only**
10 **for industrial applications but also by people working**
11 **in their garage?**

12 **MR. SOPER: Objection. Calls for**
13 **speculation.**

14 **Q (By Mr. Beck) Am I correct, Dr. Hu?**

15 **A TCE has primarily been an industrial**
16 **solvent. I couldn't tell you whether it was**
17 **frequently used as a consumer product by -- you know,**
18 **in non-industrial applications.**

19 **Q You haven't researched that, or you**
20 **researched it and don't remember, or you think I'm**
21 **wrong?**

22 **A I just don't recall.**

23 **Q If I tell you that TCE historically was the**
24 **most commonly used solvent in the 1970s in the United**
25 **States, would you know if that was accurate or**

EXAMINATION BY MR. BECK

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1 inaccurate without doing research?

2 MR. SOPER: Foundation.

3 **A Commonly used solvent in industry or for**
4 **domestic use?**

5 Q (By Mr. Beck) Domestic. Household use.

6 A I think I would be skeptical of that. I
7 mean, alcohol and isopropyl alcohol probably was used
8 much more frequently than trichlorethylene for
9 domestic use.

10 Q As a solvent?

11 A **Yes, as a solvent. It's a solvent, yes.**

12 Q (By Mr. Beck) What do you know it is used --

13 A **The definition of a solvent is one that can**
14 **basically dissolve fats in particular, so yeah, the**
15 **alcohol family of compounds are considered solvents.**

16 Q That's great but let's go back to
17 trichloroethylene for a moment. Do you know any of
18 the household uses for that?

19 A **You know, I imagine as a degreaser for**
20 **people working on their carburetor or something like**
21 **that, but I haven't reviewed that recently.**

22 Q Did you pose to Mr. Czapla some place the
23 inquiry of whether or not he used TCE or was around
24 when TCE was used in a home where he lived or say in
25 the garage?

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1 **A No, I did not.**

2 **Q**Among the risk factors you gave me, can you
3 give me a ranking of which are the risk factors among
4 the smoking, hereditary, obesity, and I'm going to
5 say, slash, metabolic syndrome, slash, diabetes,
6 hypertension and TCE exposure?

7 **A Give you a ranking in terms of --**

8 **Q**Risk. Which are associated with the most
9 cancers or -- and I'm going to be specific to renal
10 cell carcinoma.

11 **A I can't do that today sitting in front of**
12 **you, no.**

13 **Q**If you wanted to find out what the lifetime
14 excess cancer risk for a smoker or for someone with a
15 family history of kidney cancer or for a person who
16 has obesity, metabolic syndrome, and diabetes, or for
17 a person who is hypertensive and has been for a long
18 time, where would you look that up in order to attach
19 numerical significance to a risk factor?

20 **A That's a tough one. I think, you know, you**
21 **could review the literature, but I'm not sure those**
22 **statistics are readily available -- lifetime risk. It**
23 **could be a lot of epidemiology studies that look at**
24 **risk, but given the period of observation that -- you**
25 **know, that was -- in which the epidemiologic study**

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1 occurred, I'm not sure I can give you a ranking of
2 that nature in which all the risk factors you just
3 mentioned were studied in the same epidemiology study
4 and, therefore, comparable in terms of comparative
5 risk.

6 Q Prior question. This isn't a ranking
7 question. This is if I wanted to put numbers to them
8 question, would I look at epidemiology studies and see
9 if I can get it there?

10 A That would be the right place, yes, and even
11 as epidemiology studies -- you know, the data is as
12 good as what the exposure measures are for each of
13 these risks and for something like trichloroethylene,
14 it's difficult.

15 Q Is that because it's so ubiquitous?

16 A No, it's because most people couldn't really
17 tell you exactly how much they used or how much they
18 were exposed to, et cetera.

19 Q And if you wanted to look up any of the
20 associating smoking with renal cell carcinoma, is
21 there any particular literature source that you start
22 with?

23 A Yeah, there was -- you know, there's
24 abundant research. Smoking and cancer, I think you'd
25 be looking at any of those longitudinal and cohort

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1 **studies to understand what the risk is.**

2 **And there might be some reviews or**
3 **metanalyses. Those are the kinds of studies that**
4 **would give you a more consistent and overall**
5 **appreciation of what the associated risk might be.**

6 Q And a metanalysis is helpful because it
7 looks at more than one study and more than one
8 population. It looks across studies to try to come to
9 conclusions based on essentially the whole body of
10 literature?

11 **A Correct.**

12 Q With respect to the relationship between
13 family history or hereditary and renal cell carcinoma,
14 if you wanted to try to come up with a way to quantify
15 that risk, where would you look?

16 **A In any of the reviews that are associated**
17 **with these familial cancers. Oncologists have been**
18 **studying these syndromes for some time.**

19 Q And isn't it true that obesity is a risk
20 factor for renal cell carcinoma whether or not the
21 person has diabetes as well?

22 **A That has been seen in some epidemiology**
23 **studies, yes.**

24 Q With respect to hypertension, is chronic and
25 significant hypertension -- let me ask you a better

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1 question.

2 With respect to hypertension, if you wanted
3 to determine the degree of association between
4 hypertension and renal cell carcinoma, would you,
5 again, look for epidemiology studies and especially
6 metanalyses?

7 **A Yes.**

8 Q And with respect to people who have a
9 metabolic syndrome and particularly diabetes, is there
10 a strong association between that and renal cell
11 carcinoma?

12 **A Depends how you define strong.**

13 Q I'll let you do it and then you can tell me
14 how you got there.

15 **A I would say there's an association. It's**
16 **been seen in some studies but not others and I'll just**
17 **leave it at that.**

18 Q But it's your belief today, based on the
19 literature that you reviewed, that a person with
20 diabetes has a higher risk of renal cell carcinoma
21 than a person without diabetes, correct?

22 **A I believe that has been seen in several**
23 **studies and it's probably true.**

24 Q And if you wanted to try to quantify that
25 risk in order to compare it to some other risk, would

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1 you, again, look for epidemiology studies or
2 metanalyses studies to see if they helped?

3 **A Correct.**

4 Q Now, let me go back to Exhibit 1, your
5 report.

6 MR. BECK: And, Melissa, if you can project
7 it on page 4 so that the bottom half of the page is
8 capable of being viewed, please.

9 MS. LOVE: It's there, Bill.

10 MR. BECK: Thank you.

11 Q (By Mr. Beck) Dr. Hu, there's one other thing
12 I neglected to ask you, and that is in addition to the
13 transcript of the deposition of Marc Czapla that you
14 reviewed and described in your report, have you
15 reviewed a second day transcript of his deposition?

16 **A I don't know.**

17 Q Well, do you know of any transcript other
18 than the July 24th, 2020, transcript of a deposition
19 of Marc Czapla that you have read?

20 **A No.**

21 Q Has Mr. Soper or anyone else described to
22 you any testimony by Marc Czapla in a second day of
23 deposition?

24 **A Mr. Soper relayed to me when I asked about
25 the diagnostic x-rays that Mr. Czapla couldn't**

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1 remember, you know, whether he had, for instance,
2 pediatric dental x-rays or not. That's what I recall
3 of the conversation, and whether that showed up in his
4 secondary deposition, I don't -- I don't know. I
5 don't recall.

6 Q But you didn't have any discussion with Mr.
7 Soper specifically about a second day of deposition?

8 A No.

9 Q You assume, don't you, that Mr. Czapla had
10 pediatric x-rays of his teeth?

11 A I think, yeah, that's common experience for
12 all children so I wouldn't be surprised. I just -- I
13 just don't know.

14 Q And if one were to desire to quantify the
15 millirem exposure for the lifetime excess cancer risk
16 from dental x-rays, where would one look for that?

17 MR. SOPER: Object to form. Incomplete
18 hypothetical.

19 A I mean, there's all sorts of bodies that
20 have quantified the usual amount of radiation
21 associated with dental x-rays. You go to ICRP,
22 American Dental Association, the Society for Radiology
23 Protection. I'm sure they all have some aspect of
24 that.

25 Q (By Mr. Beck) And, again, pediatric x-rays

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1 like other x-rays are ionizing radiation?

2 **A Yes.**

3 Q And people typically make the decision
4 voluntarily to expose themselves to that radiation
5 because it's helpful to see if your teeth have
6 problems?

7 **A Right, and typically, you know, pediatric**
8 **x-rays are also shielded so that other parts of the**
9 **body besides the mouth, like the kidneys, are not**
10 **exposed.**

11 Q Right. They put the -- the lead apron over
12 your body so that only your head gets zapped, right?

13 **A That's right.**

14 Q Are you one of the people who believe that
15 cell phone use causes exposure to radiation that
16 potentially can contribute to cancer?

17 **A I don't have an opinion on that.**

18 Q Have you ever testified either way on that
19 subject in any lawsuit?

20 **A No.**

21 Q Have you ever written a report on that
22 subject either way in any lawsuit?

23 **A No.**

24 Q Is the radiation emitted from a cell phone
25 held up to one's ear ionizing radiation?

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1 **A Can you repeat that question, again?**

2 **Q**Sure. Is the radiation emitted by a cell
3 phone held up to one's ear during use ionizing
4 radiation?

5 **A One year of use did you say?**

6 **Q**No, I didn't say that. And I apologize. Be
7 sure and catch me if I say something and you're not
8 sure you got it because --

9 **A Yeah, I am.**

10 **Q**I'm sorry, I'm working from home like
11 everybody else in a place where the air conditioning
12 compressor is in the process of replacement.

13 **A Okay.**

14 **Q**And, therefore, I'm kept alive -- since it's
15 over 100 degrees, I'm being kept alive by a window
16 unit, and if it makes too much noise so forgive me and
17 I'll repeat anything.

18 That said, the question is: When a person
19 uses a cell phone to talk, holds it up to the ear,
20 does that expose the person to ionizing radiation?

21 **A No, not that I'm aware of.**

22 **Q**Does it expose the person to nonionizing
23 radiation?

24 **A If it is, it's a very small amount.**

25 **Q**Sure. So let's look in your report on page

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1 4, bottom half. There's a section of your report
2 titled, Estimates of Radiation Exposure Specific to
3 Marc Czapla; is that correct?

4 **A Yes.**

5 Q The first paragraph, I'm just going to read
6 it for the record. It's not that long and I've got a
7 simple question about it. It says, I have relied on
8 the August 16, 2020, exposure analysis expert report
9 on Marc and Jill Czapla, plaintiffs, produced by Clark
10 and Associates for estimate of radiation exposures by
11 Dr. Czapla in connection with the Westlake Landfill's
12 site. As noted by the Clark report, based on its
13 review of the evidence, during 1973, approximately
14 8,700 tons of leached barium sulfate containing
15 approximately 7 tons of U308 were mixed with
16 approximately 39,000 tons of soil at the Latty Avenue
17 site. The leached barium sulfate contained between
18 0.05 percent and 0.1 percent uranium as U308. The
19 residue soil mixture was transported to the Westlake
20 Landfill and deposited on site. The radioactive
21 material consists of primarily of uranium, U238, and
22 thorium, TH 230 and radium, RA 226. The soil came
23 from decontamination efforts at the Cotter
24 Corporation's Latty Avenue plant in Hazelwood where
25 the material had been stored at the time that

1 Dr. Czapla was visiting the landfill, especially
2 during 1973, the radioactive materials would have been
3 near or on the surface of the landfill.

4 First of all, I tried, did I read that
5 accurately?

6 **A You did.**

7 Q And did that entire paragraph come from the
8 Clark report? Is that the source of that information?

9 **A Yes. I don't recall if it was verbatim, but**
10 **it was taken directly from his report.**

11 Q I want to go to the sentence that says at
12 the time that Dr. Czapla was visiting the landfill
13 especially during 1973, the radioactive materials
14 would have been near or on the surface of the
15 landfill. My question is, what do you remember about
16 why Dr. Clark theorized that would especially be true
17 during 1973?

18 **A Well, I recall him taking the history that**
19 **that's the year that Marc Czapla began to play on**
20 **that -- at that site.**

21 Q Right. But why would the materials be near
22 or on the surface of the landfill more in that year
23 than in any other?

24 **A Well, I don't recall the specifics, but you**
25 **know, after deposition, that's when, you know,**

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1 **you'll -- everything's fresh, and then there's erosion**
2 **and those factors that tend to especially over time**
3 **dilute whatever is on the surface.**

4 Q Okay. Anything else you remember about
5 Dr. Clark's theory that especially during 1973 the
6 radioactive materials would have been near or on the
7 surface of the landfill?

8 MR. SOPER: Object to the form.

9 **A Not -- not that I recall.**

10 Q (By Mr. Beck) Thank you. The next paragraph
11 states -- this is in your report Exhibit 1 states based
12 on testimony supplied by Dr. Czapla, he played at the
13 Bridgeton Landfill, in parentheses you say Westlake
14 Landfill, during the summers and weekends from 1973
15 through 1978, in parentheses you say age 8 through age
16 13. According to Dr. Czapla, he and two friends would
17 visit the landfill several times per week and would
18 stay for several hours during each visit. The boys
19 would play in the dirt, search through the trash, and
20 watch the bulldozers and trucks working on site.

21 Have I read that accurately?

22 **A Yes.**

23 Q If I refer to written question answers to
24 questions that are called interrogatories in a
25 lawsuit, do you know generally what that refers to?

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1 **A Yes.**

2 Q Did you review or were you given excerpts
3 from interrogatory answers prepared by counsel and
4 supplied by Marc Czapla?

5 **A Not -- not that I recall.**

6 Q Do you know if the wording of this paragraph
7 of your report matches the wording of one of the
8 interrogatory answers signed by Marc Czapla?

9 **A I have no idea.**

10 Q Am I correct, sir, that the years 1973
11 through 1978 are the only years in which you have any
12 information that Marc Czapla was exposed to
13 radioactive material at the landfill?

14 **A That's what I recall.**

15 Q Do you have any information about whether
16 Mr. Czapla -- I'm sorry, whether Marc Czapla or
17 Dr. Czapla -- let me -- let me straighten that out.

18 You refer to Dr. Czapla throughout your
19 report, correct?

20 **A Yes.**

21 Q He's not a medical doctor like you, but he's
22 a PhD so you call him Dr. Czapla, true?

23 **A Correct. Out of respect.**

24 Q If I -- if I fail to, please don't take it
25 as a sign of disrespect. Take it as a sign of I talk

1 about a plaintiff in a lawsuit by his name, and I
2 haven't met the gentleman.

3 So going back to your report, you say that
4 Dr. Czapla played at the landfill during summers and
5 weekends from when he was 8 until he was 13, and you
6 confirmed, I think, that there's no time before or
7 after that that you're aware of that he played at the
8 landfill?

9 **A Not that I recall.**

10 Q Now, for this material that was brought to
11 the landfill from the Latty Avenue property, we're
12 talking about some 47,700 tons of material, according
13 to your best information; is that correct?

14 **A Right.**

15 Q Do you know how long it took to truck that
16 material to the landfill?

17 **A I don't know.**

18 Q Do you know when in 1973, what month or
19 months, that material was trucked to the landfill?

20 **A No.**

21 Q Do you know whether or not Dr. Czapla claims
22 he was playing on the landfill at the very same time
23 as the trucks were bringing in that material and
24 dumping it on the ground?

25 **A I don't know.**

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1 Q Do you have any information about during
2 what month in 1973 Dr. Czapla says he was playing on
3 the landfill?

4 **A No.**

5 Q Going back to the paragraph describing when
6 Dr. Czapla says he played in the landfill, is that
7 paragraph based entirely on the July 24, 2020,
8 deposition of Marc Czapla?

9 **A I think it's actually based on the report
10 prepared by James Clark and Associates.**

11 Q All right. Based on the information that
12 you've been provided, does Dr. Czapla claim he went to
13 the landfill even in the winter when the ground was
14 frozen and it was snowing in St. Louis County?

15 **A I don't know.**

16 Q Were there whole months or seasons of the
17 year during which Dr. Czapla was not present at the
18 landfill between 1973 and 1978?

19 **A I don't know.**

20 Q Based on his description about playing in
21 the dirt, searching through the trash, and watching
22 bulldozers and trucks working, do you have any
23 information based upon which you conclude that he did
24 so when the ground was frozen?

25 **A No. I relied on the exposure assessment by**

1 **Clark and Associates.**

2 Q But you haven't independently evaluated
3 whether the number of days of exposure Dr. Clark uses
4 as the basis for his calculation is or is not an
5 accurate expression of Mr. Czapla's testimony?

6 **A I do not have an opinion on that.**

7 Q And what you've done is taken Dr. Clark's
8 numbers then and relied on them in toto so that if
9 he's got an error in them, it translates into your
10 adoption of his calculation?

11 MR. SOPER: Object to form.

12 **A Yes.**

13 Q (By Mr. Beck) When in 1978 did Dr. Czapla
14 stop going to the landfill?

15 **A I don't know exactly.**

16 Q Why in 1978 did Dr. Czapla stop going to the
17 landfill?

18 **A I recall reading in James Clark's reports
19 that he engaged in some other activity instead.**

20 Q Was it racquetball?

21 **A I think that was mentioned.**

22 Q Was it the Bridgeton Municipal Athletics
23 Complex?

24 **A That I don't recall.**

25 Q During the period he says he went to the

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1 landfill, do you have any understanding why Dr. Czapla
2 between the ages of 8 and 13 decided playing in the
3 dirt of the landfill was more fun than playing at
4 Bridgeton Municipal Athletic Complex which was closer
5 to his home?

6 **A I have no information of that.**

7 Q Do you know of any human being on earth able
8 to corroborate Marc Czapla's claim that he played at
9 the Westlake Landfill between 1973 and 1978?

10 MR. SOPER: Object to form.

11 **A No.**

12 Q (By Mr. Beck) Have you seen any -- like a
13 contemporaneous record, a photograph, an affidavit of a
14 corroborating witness, or anything other than Marc
15 Czapla's testimony and Dr. Clark's adoption of it, that
16 says Marc Czapla's ever been to the Westlake Landfill?

17 **A No.**

18 Q And the same question with a slight
19 variation. Have you seen any of that that
20 corroborates that Marc Czapla was at the Westlake
21 Landfill as often as he claims and for as long as he
22 claims between 1973 and 1978?

23 **A No.**

24 Q Did you make any requests to interview Marc
25 Czapla yourself to simply push back on that

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1 information and ask your own questions and come to an
2 independent conclusion of whether it sounded plausible
3 to you or not?

4 MR. SOPER: Object to the form.

5 **A No.**

6 Q (By Mr. Beck) Have you seen patients, Dr. Hu?

7 **A I still do.**

8 Q When you see patients, you know, even in
9 this pandemic moment of telemedicine, do you talk to
10 them about their problems before diagnosing them?

11 **A Of course.**

12 Q I'd like to go to the next paragraph. We're
13 now on page 5 of your report which is Exhibit 1.
14 Towards the top, do you see a paragraph that begins
15 using detailed information?

16 **A Yes. Counselor, could I -- can we pause for**
17 **a moment? I just -- I've noticed that for the last**
18 **couple of minutes, my image on the screen in front of**
19 **me has been frozen. Does that matter?**

20 Q Sure. It matters. Let's go off the record
21 so we can solve that if we can, and we'll let the tech
22 support people who are so helpful try to solve that
23 for us. I'm going to make some coffee while you do
24 that. So let's go off the record.

25 VIDEOGRAPHER: Going off the record at

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1 12:21 p.m.

2 (A break was taken.)

3 VIDEOGRAPHER: We are back on the record at

4 12:26 p.m.

5 MR. BECK: And, Melissa, please make sure
6 you're projecting Exhibit 1 and showing page 5.

7 MS. LOVE: I am, Bill.

8 MR. BECK: Thank you.

9 Q (By Mr. Beck) One second. All right.

10 Dr. Hu, after we reset, are you ready to continue?

11 A Yes.

12 Q So on page 5 you give a summary description
13 of some information that was provided by James Clark
14 that you relied upon, and it's -- it starts in a
15 paragraph that says using detailed information. Do
16 you see that?

17 A Yes.

18 Q Read along, using detailed information from
19 Dr. Czapla's interview on the timing, duration, and
20 activities when he visited the contaminated site and
21 methods outlined by the Agency for Toxic Substances
22 and Disease Registry, ATSDR, for assessing community
23 exposures to radiation, Clark and Associates proceeded
24 to calculate the portion of the dose in millirems,
25 mrem, that Dr. Czapla received from exposure to

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1 radioisotopes deposited in Westlake Landfill,
2 expressed as, quote, reasonable maximum exposure
3 concentration, closed quote, in parentheses RME
4 values. Have I read that accurately?

5 **A Yes.**

6 Q What do you understand ATSDR meant when they
7 referred to community exposures?

8 A I think they were trying to come up with a
9 way that they can communicate to communities what the
10 likely exposures were to whatever it is, toxic
11 chemicals or radiation under various circumstances,
12 that the community would understand and would be
13 concerned about.

14 Q Did you read a copy of the ATSDR report from
15 which Dr. Clark worked in setting up his equation
16 through the toolbox, tool kit?

17 A I did at some point. I think that was last
18 year but not recently.

19 Q You've done some work on a nearby
20 radioactive area called Coldwater Creek, have you not?

21 A Right.

22 Q Are you generally familiar with Coldwater
23 Creek?

24 A Yes.

25 Q And you read the ATSDR report on Coldwater

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1 Creek?

2 **A Yes.**

3 Q Doesn't that report specifically say that
4 you can't use that report or its method to establish
5 individual exposure for the causation of any
6 individual disease?

7 MR. WATSON: Object to form and foundation.

8 **A No.**

9 VIDEOPHOTOGRAPHER: Looks like we lost your
10 screen again.

11 THE WITNESS: Geez.

12 VIDEOPHOTOGRAPHER: There we go.

13 Q (By Mr. Beck) Thank you. And the question,
14 which was objected to, but the question is doesn't the
15 ATSDR report for Coldwater Creek specifically say that
16 it can't be used to show individual exposures or the
17 causation of any individual disease?

18 MR. SOPER: Same objections.

19 **A Yeah, I do recall that -- that statement**
20 **exists in the -- in the monograph, but as far as I**
21 **know, that still remains the best available**
22 **methodology to make these kind of estimates.**

23 Q (By Mr. Beck) Is it true that sometimes there
24 just isn't a sufficient available methodology to make
25 estimates of exposure to something potentially

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1 hazardous? There's just not enough information to do
2 it reliably?

3 A That may be true in some circumstances, but
4 in this case, I think that Dr. Clark did the best he
5 could, and I relied on his exposure assessment.

6 Q Thank you. And do you have an understanding
7 of what this capitalized phrase reasonable maximum
8 exposure concentration means?

9 A Yes.

10 Q What do you understand it to mean?

11 A This is a term that basically was created by
12 the Environmental Protection Agency regarding
13 Superfund which is a piece of legislation that governs
14 the disposition of hazardous waste sites all over the
15 country. It is a way for the Environmental Protection
16 Agency to try to sum up all the various exposure
17 pathways and come up with an estimate of exposure, if
18 you will, that is on the higher end of exposure
19 estimates but within plausible range. It's definitely
20 not a worst case scenario. It's -- it's a summary
21 estimate of exposures.

22 Q But there's something else that's not, and
23 that is it's not average, right? It's intentionally
24 greater than average?

25 A Exactly, yes.

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1 Q And the term reasonable maximum exposure or
2 the acronym R -- REM applies in two ways in a
3 Superfund risk assessment in that it refers to the
4 concentrations of the hazardous substance that you
5 assume someone was exposed to, and it also refers to
6 the assumption that you make about how frequently and
7 for how long that person was exposed. Both of those
8 are calculated in the Superfund context based on REM
9 or reasonable maximum exposure, correct?

10 A **I believe so.**

11 Q Have you looked beyond Dr. Clark's report to
12 see how the exposure point concentrations or the
13 reasonable maximum exposure concentrations were
14 calculated for the Westlake Landfill?

15 A **I'm not sure I understand what you mean by
16 look beyond this report. Is that -- is that what you
17 said?**

18 Q Well, let me ask it a different way. That
19 was probably vague. Have you done your own work to
20 calculate reasonable maximum exposure point
21 concentrations for the Westlake Landfill at any -- for
22 any point?

23 A **No.**

24 Q All right. Let's go to the next
25 paragraph -- yeah, I'm still on page 5. And read

1 along with me. Does it say in your report, Exhibit 1,
2 the internal committed doses calculated for Dr. Czapla
3 that are specific to his kidneys ranged from 3.06 to
4 3.94 E plus 03 mrem or millirem, based on -- I'm
5 sorry, based upon the reasonable maximum exposure
6 concentration in quotes RME values. These internal
7 committed dose estimates to the kidney were then used
8 to extrapolate excess risk of kidney cancer, which was
9 estimated to range from 1.5 to 2 out of 10,000. Have
10 I read that accurately?

11 **A Yes.**

12 Q And let's start by unwinding the scientific
13 notation. Does 3.06 to 3.94 E plus 03 -- 03 millirem
14 mean 3,060 to 3,940 millirem?

15 **A Yes.**

16 Q And based on your understanding of
17 Dr. Clark's calculations, are those lifetime dose
18 calculation?

19 **A That's what internal committed doses mean.**

20 Q Yeah, that's a good point. Let's go back
21 and define, what is an internal committed dose. As
22 you understand, its calculation by James Clark.

23 **A Well, internal committed dose relates**
24 **specifically to radionuclides and what the basic**
25 **biological impact would be based on the types of**

1 **radionuclides, the waiting factor, and how that**
2 **translates in terms of equivalent dose to the**
3 **particular organ.**

4 Q The exposure pathways, Dr. Hu, you
5 identified from Dr. Clark's report, were ingestion and
6 inhalation; is that correct?

7 **A Yes.**

8 Q And ingestion means that Dr. Czapla played
9 in dirt, some of it would get in the air and if his
10 mouth were open, get into his mouth and he might
11 swallow it?

12 **A Correct.**

13 Q And inhalation means that some of the dirt
14 could be suspended in the air or particles of it could
15 be suspended in the air while Dr. Czapla as a child
16 was breathing and he could inhale it; is that correct?

17 **A Correct. And also point out that ingestion**
18 **includes hand-to-mouth contact which tends to be**
19 **normal behavior for a child.**

20 Q So a second ingestion pathway isn't just
21 opening your mouth and sucking in what's in the air.
22 It's also if you put your hand to your mouth and your
23 hands got dirt on it, you can some of the dirt in your
24 mouth; is that right?

25 **A Correct.**

1 Q And then let's start with the ingestion
2 pathway. Once the dirt is in your mouth, how does it
3 get to your kidney?

4 A Well, have to be swallowed and then absorbed
5 in the gastrointestinal tract, and then it goes into
6 circulation and gets excreted by the kidney.

7 Q Circulation through the blood?

8 A Yes.

9 Q And it would need to be circulated to the
10 kidney and not excreted from the kidney?

11 A Yeah. When it gets excreted through the
12 kidneys, it has to actually pass through kidney tissue
13 either by passive diffusion or active diffusion so
14 excretion by the kidneys automatically means that the
15 kidney cells are exposed.

16 Q Got it.

17 A Sometimes they'll get deposited in the
18 kidneys as well and then just linger there, and that's
19 true for, you know, many types of -- of substances and
20 it's, you know, true for these radionuclides as well.

21 Q And Dr. Clark's calculations are intended to
22 pick up both the particle that stated residence in the
23 kidney, and the particle that passes through the
24 kidney and is excreted?

25 A I believe so.

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1 Q Let's go to the inhaled particle. The
2 inhaled particle. Once it comes in through the nose
3 or in through the mouth, where does it go from there
4 and how does it get to the kidney?

5 A Well, an inhaled particle would be deposited
6 on the -- on the naso-tracheal surface or if the
7 particle size is below micron, it could get deposited
8 all the way down to the pulmonary alveoli. Either way
9 there's an opportunity for absorption into the blood
10 stream and then circulation in the body, and, again,
11 some of it gets excreted through the kidneys. On the
12 way, it exposes kidney tissue and some of it gets
13 deposited in the kidney tissue.

14 Then also I think as you might refer to
15 inhalation involves the mucociliary clearance of
16 particles that are deposited on the epithelium of the
17 respiratory tree that typically leads back to the
18 pharynx and then you swallow it, and then you have
19 another opportunity to absorb whatever it is that you
20 inhaled. Now it's in the gastrointestinal track and
21 we already talked about that.

22 Q Now, other than the inhalation pathway and
23 the ingestion pathway, when you wrote your report,
24 were you aware of any other pathway of radioactive
25 exposure to the kidney that Dr. Czapla was

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1 calculating?

2 A You mean that Dr. Clark was calculating on
3 behalf --

4 Q Thank you.

5 A -- of Dr. Czapla? Yep.

6 Q Thank you.

7 A Yes.

8 Q Said that wrong. I'll say it over. When
9 you wrote your report, did you have awareness of any
10 exposure pathway besides ingestion and inhalation that
11 Dr. Clark calculated?

12 A I think he might have taken into account
13 external radiation which would be small because the
14 kidneys are a retroperitoneal organ relatively buried
15 and not as vulnerable to exposure to radionuclides
16 because they're -- they're a deep tissue organ.

17 Q So going back for a moment to this millirem
18 calculation by Dr. Clark, why does he express it as a
19 range rather than a single value?

20 A I think part of the convention is -- is
21 accommodating for the fact that there's different
22 rates of absorption, particularly from the lungs, and
23 that accounts for the two different estimates, I
24 believe typically that are made in this kind of
25 situation.

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1 Q And as you understand Dr. Clark's
2 calculation, does the radioactive exposure to the
3 kidneys stop in 1978 or continue, thereafter, based on
4 his calculation method?

5 A Well, I'm not exactly sure what he did --
6 what assumptions he made, but we do know that
7 radionuclides get deposited in the kidneys, so I would
8 assume he would have accounted for that as well. So
9 it's not that the exposure would be done, cleared,
10 but, in fact, there's continuing exposure.

11 Q And so your expectation is that the range of
12 3,050 to 3,940 millirems lifetime is a range that
13 would have occurred over a period of the 47 years
14 since 1973?

15 A Perhaps, but I -- I don't recall or know as
16 I sit here today exactly what assumptions Dr. Clark
17 made.

18 Q So you didn't check his work as -- as it
19 were. You relied on him to do it right and adopted it
20 out without purporting to do a second review of the
21 same effort?

22 A I -- you know, I read his document, but I --
23 I just can't remember, you know, those assumptions
24 what he made.

25 Q So do you know whether Dr. Clark calculated

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1 an annual internal committed dose to the kidneys or
2 Dr. Czapla for any particular year?

3 **A I think that might be in some of his tables**
4 **but I don't recall. He has a long list of tables in**
5 **his supplement.**

6 Q Do you know whether there was any year in
7 which Dr. Clark calculated a dose in excess of 500
8 millirems in that year?

9 MR. SOPER: To the kidneys, Bill?

10 MR. BECK: Sure.

11 **A Yeah, I don't recall.**

12 Q (By Mr. Beck) What about for the body as a
13 whole? Did Dr. Clark calculate as much as 500 millirem
14 exposure in any one year?

15 **A In any one year, I -- I don't recall that.**

16 Q Did Dr. Clark calculate either for the
17 kidneys or for the body as a whole exposure in excess
18 of 100 millirems in any one year?

19 **A I'd have to go through his report and**
20 **refresh my memory. I don't recall.**

21 MR. SOPER: Bill, do you want him to look at
22 his report?

23 Q (By Mr. Beck) Dr. -- Dr. Hu, if you want to
24 look at your report, take your time and feel free. If
25 you want to dig out Dr. Clark's report and start going

1 through the hundreds of pages of tables, I don't think
2 we have time. There's a limit on the deposition.

3 **A Yeah.**

4 Q I didn't see in your report that helps with
5 this.

6 **A Yeah, I didn't address that at all.**

7 Q So I want to talk about this excess risk of
8 kidney cancer. That's in the second paragraph or
9 second sentence of the paragraph that we're looking
10 at. You say these internal committed dose estimates
11 to the kidneys were then used to extrapolate excess
12 risk of kidney cancer which was estimated to range
13 from 1.5 to 2.0 out of 10,000. Do you see that?

14 **A Yes.**

15 Q And that's a description of what you
16 understand Dr. Clark did in his report, correct?

17 **A That's what he did in his report based on
18 tables that are available for -- for making those
19 kinds of extrapolations.**

20 Q And that's the information that you relied
21 on in order to conduct your own evaluation in this
22 report with regard to the risk of kidney cancer,
23 correct?

24 **A Yes.**

25 Q Now, how much of kidney cancer is renal cell

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1 carcinoma?

2 A It's the great majority. I believe it's
3 around 90 to 93 percent or so. The rest is
4 transitional cell carcinoma and carcinoma of the renal
5 pelvis which is quite a bit rare.

6 Q What about clear cell carcinoma? Is that
7 more frequent than renal cell carcinoma?

8 A Excuse me. Clear cell carcinoma is just one
9 of -- one type of renal cell carcinoma. The other
10 major one being papillary.

11 Q So you view clear cell carcinoma as a subset
12 of renal cell carcinoma?

13 A Yes.

14 Q Okay. Now, why does Dr. Clark provide the
15 risk as a range of 1.5 in 10,000 to 2 in 10,000?

16 A I think that directly relates to the range
17 he gave for the estimate of the -- the specific doses
18 to the kidney, the internal committed doses that we
19 just talked about.

20 Q You're saying the ratio of 1.5 to 2 is about
21 the same as the ratio of 3,060 to 3,940?

22 A Correct.

23 Q And so tell me if this is fair, the more
24 days of exposure, the more hours of exposure that
25 Dr. Clark accepted Marc Czapla as having playing at

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1 the landfill, the higher Dr. Clark would calculate the
2 millirem exposure and the excess kidney cancer; isn't
3 that right?

4 **A Yes.**

5 Q It's a direct linear correlation, right?

6 **A Is it linear? Probably is. Not -- I'm not**
7 **exactly sure.**

8 Q But you're saying you know it directly
9 correlates not sure if it's a linear correlation or
10 some other shape?

11 **A Yeah.**

12 Q Okay. When you --

13 **A Yes.**

14 Q -- use in your report the term excess risk
15 of kidney cancer, what you're saying is in excess of
16 the 1 out of 42 or 1 out of 45 background risk of
17 kidney cancer, correct?

18 **A Correct.**

19 Q Pardon me. Did you happen to calculate for
20 comparison purposes how many that is out of 10,000?

21 **A You mean the 1 out of 42?**

22 Q Yes, sir.

23 **A I mean that would be pretty easy to**
24 **calculate, but the challenge here, of course, is that**
25 **this is not really a typical case of kidney cancer.**

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1 **This is someone who developed kidney cancer at the age**
2 **of 47 which is very young.**

3 **So what is the, you know, the chance of**
4 **somebody developing kidney cancer at that age. I**
5 **think it's substantially lower than -- than 1 out of**
6 **42.**

7 Q Not -- not that it's not relevant, but I
8 move to strike because that wasn't responsive.

9 So, Dr. Hu --

10 MR. SOPER: Actually it was.

11 MR. BECK: I'm -- I'm sure.

12 Q (By Mr. Beck) Dr. Hu, are you able to
13 calculate whether it's 1 in 42 or 1 in 45 how many that
14 would be out of 10,000?

15 **A Sure. Are you asking me to do that right**
16 **now?**

17 Q Yeah. Let's use either one you want or both
18 of them, and just give me a range of how many
19 background kidney cancers one would expect among
20 10,000 people based on your understanding of it?

21 **A About 238.**

22 Q Now, do you suggest that -- well, strike
23 that.

24 That is a risk over a lifetime of having
25 kidney cancer, isn't it?

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1 **A** In the general population?

2 **Q** Correct.

3 **A** **As estimated by using United States**
4 **statistics?**

5 **Q** Sure. And so for an average American,
6 there's about 238 in 10,000 background risk of kidney
7 cancer; is that correct?

8 **A** **Something like that, yeah.**

9 **Q** Now, have you seen that risk laid out across
10 ages to determine what the risk is of kidney cancer
11 occurring at a particular age or by a particular age?

12 **A** **I have not seen that statistic.**

13 **Q** And you haven't calculated it yourself?

14 **A** **No.**

15 **Q** Is it true that a lot of people --

16 **MR. SOPER:** I'm sorry. Dr. Hu, did you have
17 something?

18 **A** **Yeah, sorry. I mean, what I do know is that**
19 **the average age for developing kidney cancer is around**
20 **64 which means clearly that he's an outlier, you know,**
21 **having kidney cancer at such a young age, and the risk**
22 **for that has got to be substantially than the 1 out of**
23 **42.**

24 **Q** (By Mr. Beck) But you haven't seen or
25 prepared any graphing or data distribution that allows

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1 you to say how unlikely it is for a person to get
2 kidney cancer at the age of 47?

3 **A I have not.**

4 Q And isn't it true that even at the average
5 age of detection is 64, that may not be the average
6 age of occurring kidney cancer? There could be a time
7 lag between occurrence and detection?

8 **A Well, of course but, you know, his age was
9 47 when it was detected, and 64 is the age, I believe,
10 of detection as -- as quoted in terms of the average
11 age of a person getting kidney cancer. So you're
12 comparing apples to apples there.**

13 Q So let me ask you this. If 64 is the
14 average, that means some people are 64, some people
15 are less than 64, and some people are more than 64,
16 and to say more about it than that we have to see a
17 data distribution?

18 **A Yeah.**

19 Q And you haven't seen it?

20 **A No.**

21 Q Now, I just want to go back to this risk
22 range for lifetime excess risk of kidney cancer
23 calculated by Clark based on claims of exposure by
24 Czapla at 1.5 to 2 out of 10,000. In your report, you
25 describe degrees of risk including statistics that

1 show a negligible risk, statistics that show a minimal
2 risk, and statistics that show a very low risk. Do
3 you recall that?

4 **A Yes, I do.**

5 Q And so if someone's lifetime excess cancer
6 risk is less than 1 in million, that would be in the
7 category you described as negligible?

8 **A That's directly quoting the World Health
9 Organization's risk communication classification
10 system.**

11 Q I hear you, but I'm directly quoting your
12 report, right, or at least --

13 **A Yes.**

14 Q -- paraphrasing it?

15 **A Sure.**

16 Q And in your report, you describe a 1 in
17 100,000 lifetime excess cancer risk to a particular
18 organ as minimal; is that correct?

19 **A Right.**

20 Q And in your report you describe a 1 in
21 10,000 risk -- lifetime excess cancer risk of kidney
22 cancer as a very low risk; is that correct?

23 MR. SOPER: I -- I object to that. I think
24 you mean less than that number, Bill, reading his
25 report.

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1 Q (By Mr. Beck) Let me rephrase the question to
2 address the objection.

3 Dr. Hu, isn't it correct in your report you
4 describe risks less than 1 in 10,000 as being a very
5 low lifetime excess kidney cancer risk, correct?

6 A **Could I have the court advance the screen to
7 that section of my report, please?**

8 Q Hold on just a second. I wasn't going to
9 get there for a minute, but let's go there and hold on
10 just a sec.

11 MR. SOPER: I think it's page 10.

12 MR. BECK: Thank you. It is.

13 MR. SOPER: The bottom paragraph.

14 A **Okay. Can you repeat the question, Counsel?**

15 Q (By Mr. Beck) Sure. And so based on what you
16 say in your report, a lifetime excess cancer risk of
17 kidney cancer less than 1 in 10,000 would be what you
18 categorize as a very low risk based on the World Health
19 Organization criteria, correct?

20 A **Yes.**

21 Q And if Mr. Czapla overstated his exposure to
22 the Westlake Landfill between 1973 and 1978 by, say,
23 half of what he described, counting Dr. Clark's
24 calculation in half, then you would say that
25 Dr. Clark's calculation reflects a very low risk --

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1 lifetime excess risk of kidney cancer; is that
2 correct?

3 **A I mean, that's a hypothetical, and, I mean,**
4 **I guess -- I guess I could agree with that. I have to**
5 **see exactly how that happened.**

6 **Q Well, and I -- I don't need to go further on**
7 **that. So if Dr. Clark used accurate exposure**
8 **information from Marc Czapla -- Czapla and because of**
9 **inherent conservatism and overstatement of risk in the**
10 **methodology he used simply calculated a risk twice as**
11 **high as was real, then you would have regarded that**
12 **calculation -- and I'm going to strike that and start**
13 **all over.**

14 **A Okay.**

15 MS. LOVE: Hey, Bill, it's Melissa. Hang on
16 for a second. I can't see Dr. Hu. Can anybody else?

17 **A Yeah, I can't see myself either. I'm having**
18 **this technical issue again. Can we pause and I'll try**
19 **to do the fix that I did earlier with the**
20 **videographer?**

21 **Q (By Mr. Beck) Let's do that and I'll use that**
22 **time to talk about this question entirely.**

23 VIDEOGRAPHER: Going off the record at
24 1:02 p.m.

25 (A break was taken.)

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1 VIDEOGRAPHER: We are back on the record at
2 1:06 p.m.

3 MR. BECK: Forgive the delay. I used the
4 unplanned break for personal comfort. We're back on?

5 VIDEOGRAPHER: Yeah. Sorry, Bill. Do you
6 need more time?

7 MR. BECK: No, I'm good.

8 VIDEOGRAPHER: Okay. Yeah, we're on the
9 record.

10 Q (By Mr. Beck) Okay. Dr. Hu, did Marc Czapla
11 ever smoke?

12 A **As far as I know, no.**

13 Q If you found out that Marc Czapla had been a
14 smoker at some time in his life, that would be news to
15 you?

16 A **Correct.**

17 Q Does Marc Czapla have any hereditary factors
18 or family history that has been described to you and
19 that would be a kidney cancer risk to your knowledge?

20 A **No.**

21 Q Based on a medical definition, Dr. Hu, was
22 Marc Czapla obese when his kidney cancer was
23 diagnosed?

24 A **I believe so.**

25 Q And do you have any information about

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1 whether and for how long he would have been regarded
2 medically as obese prior to 2006?

3 **A I don't think so, no.**

4 **Q**Have you been able to run any calculation or
5 conduct an analysis in which you exclude obesity as a
6 possible cause of Marc Czapla's kidney cancer?

7 **A I don't think that was called for here.**

8 **Q**But you haven't done it?

9 **A No. I mean, as far as I'm aware, the fact**
10 **that he has more than one risk factor for kidney**
11 **cancer does not undercut the contributing influence of**
12 **his radiation exposure so that was not necessary.**

13 **Q**We'll get back to that. Have you done
14 anything, any calculation or analysis -- well, strike
15 that.

16 Marc Czapla has a history of hypertension;
17 is that correct?

18 **A Correct.**

19 **Q**How far back does that go?

20 **A At least until about 2006.**

21 **Q**And what about before you have record?

22 **A I don't have records of that so I don't**
23 **know.**

24 **Q**Is it possible that Marc Czapla has been
25 hypertensive since he was a young man?

1 **A Sure.**

2 **Q**Did you ask counsel or anyone to obtain
3 information about how long Marc Czapla has been
4 hypertensive?

5 **A I don't recall.**

6 **Q**Have you been provided any historical data
7 concerning Marc Czapla's hypertension and how well his
8 blood pressure has been controlled by medicine over
9 time?

10 **A I don't recall seeing that information.**

11 **Q**Is Marc Czapla diabetic?

12 **A I believe he is.**

13 **Q**Do you know how long it has been diagnosed
14 that Marc Czapla is diabetic?

15 **A I have to go back to my notes to refresh my
16 memory on that.**

17 **Q**What's the earliest that you remember?

18 **A I remember that he was being diet-controlled
19 for some time. His hemoglobin A1C's weren't terrible,
20 but then they started to get worse but I don't
21 remember the dates.**

22 **Q**Do you know whether or not Marc Czapla was
23 diabetic in his 20s?

24 **A I don't recall that.**

25 **Q**Within the 238 out of 10,000 Americans who

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1 will get kidney cancer in their lifetime, are there
2 some of them for whom a doctor is simply unable to
3 define a cause?

4 MR. SOPER: Object to form.

5 **A I would agree with that.**

6 Q (By Mr. Beck) So with regard to Marc Czapla's
7 exposure -- and, actually, let me give you the benefit
8 of your report rather than play memory quizzes with
9 you.

10 Let's go to page 6, first full paragraph.
11 You list one, two, three, four -- five radioisotopes.
12 Do you know whether uranium-238, uranium-236,
13 thorium-230, thorium-232 or radium-236 which of those
14 are the most significant in Dr. Clark's calculation of
15 risk that you relied upon?

16 **A I don't recall. Have to go back and look at
17 his report to ascertain that description.**

18 MR. SOPER: And, Dr. Hu, it's not a memory
19 test. You're free to refer to his report if you'd
20 like.

21 MR. BECK: It actually is a memory test. If
22 the doctor wants to refer to his own report, he's
23 welcome to. If he wants to refer to a report from
24 someone else, I'll take that under advisement, but I
25 don't want to use up my seven hours doing research.

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1 MR. SOPER: Well, if you're asking him
2 questions about Dr. Clark's report, you should let him
3 review the report.

4 MR. BECK: I'm asking if he has a memory
5 about Dr. Clark's report, which I am absolutely
6 entitled to ask and have answered.

7 **A Sure. I don't recall which specifics -- or**
8 **radioisotopes of these elements he was basing his**
9 **calculations on.**

10 Q (By Mr. Beck) Is it correct that uranium-238,
11 uranium-236 and thorium-232, all three, have no
12 material contribution to Dr. Clark's risk calculation?

13 A **I don't know and I would have to investigate**
14 **that further.**

15 Q Do you know whether or not Dr. Clark in
16 assessing the risk of exposure to radium-236 used data
17 from some place close in time to the 1973 to '78 time
18 period?

19 MR. SOPER: Object to form.

20 A **I don't know the answer to that.**

21 Q (By Mr. Beck) Do you know whether Dr. Clark
22 in calculating the risk of exposure by inhalation to
23 radium-226 of Mr. Czapla actually based his calculation
24 on a risk 1,000 years from now in the future?

25 MR. SOPER: Object to form. Misstates

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1 Dr. Clark's report.

2 **A I don't know the answer to that.**

3 Q (By Mr. Beck) Do you know whether Dr. Clark
4 relied upon the final baseline risk assessment for the
5 Westlake site supplied to EPA, and, in particular, the
6 air modeling report attachment to that baseline
7 assessment in determining inhalation risk?

8 **A Can you repeat the question, please?**

9 Q Sure. Let's read that one back if the court
10 reporter has it.

11 (At this time the court reporter read
12 back the previous question.)

13 **A I don't know. I don't recall.**

14 Q (By Mr. Beck) Do you know what thorium
15 isotope is a daughter isotope of uranium-238?

16 **A I'd have to go back and look at the -- the**
17 **series of isotopes to refresh my memory on that.**

18 Q Do you know what radium isotope is the
19 daughter isotope of thorium-230?

20 **A Same response.**

21 Q Do you know what the process is called by
22 which over time thorium-230 becomes radium-226?

23 **A Radioactive decay.**

24 Q Do you know how long that takes for
25 thorium-230 to decay to radium-226?

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1 **A** I'd have to go back and look at the decay
2 series statistics to refresh my memory on that.

3 **Q** Is thorium-230 a gamma unit?

4 **A** It's an alpha particle and I don't think
5 it -- again, I'm not sure. I don't recall.

6 **Q** Does thorium-230 emit alpha particles?

7 **A** Yes.

8 **Q** Relative to radium-226, is thorium-230
9 regardless -- regarded as a very weak radioactive
10 substance?

11 **A** I don't recall. I'd have to look at the
12 relevant charts to answer accurately.

13 **Q** Do you know that the degree of strength or
14 activity of a radionuclide can be expressed in a unit
15 of measure called picocuries per gram?

16 **A** Yes.

17 **Q** Do you know the highest reading in
18 picocuries per gram ever detected at the surface of
19 the Westlake Landfill was for thorium-230?

20 **A** I don't recall that number.

21 **Q** For comparison purposes, do you know what
22 the radioactivity of the thorium and thorotrast,
23 T-H-O-R-O-T-R-A-S-T, was?

24 **A** I'm sorry. Repeat the question.

25 **Q** Do you know what the degree of radioactivity

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1 in picocuries per gram was of the thorium in the
2 solution that was known as thorotrust that was used
3 for medical purposes in the United States?

4 **A I don't know the answer to that.**

5 **Q**Do you have any idea what the ratio is
6 between the average thorium concentration in
7 thorotrust or activity in thorotrust to the average
8 thorium activity at the surface of the Westlake
9 Landfill at its highest point?

10 **A I don't know the answer to that.**

11 **Q**Let me step away from theory for just a
12 moment. To -- to set this up, though, in your report
13 you adopted the view that thorium risk is linear no
14 threshold; is that fair?

15 **A I think that's true for all radiation at
16 this point. That is the basic assumption.**

17 **Q**And so my question's going to be what have
18 you done to research whether that assumption is
19 scientifically valid or not valid? Have you reviewed
20 epidemiologic literature yourself, or have you simply
21 relied on what the WHO report says?

22 **A I've relied on the expert opinion of reports
23 such as Deep Biological Effects of Ionizing Radiation
24 Committee.**

25 **Q**Is that a WHO report?

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1 A I think DBEIR was commissioned by --
2 co-commissioned by, I guess --

3 Q I can't hear you. I'm sorry.

4 A Yeah, I can't remember the exact pronounce
5 of DBEIR commission, whether it's WHO or International
6 Agency for Research on Cancer, but it is an
7 international and well recognized authority on
8 radiation health effects.

9 Q And simple -- simple question. You referred
10 to reports plural. Are there any others besides that
11 one that you're relying on?

12 A That would be the main one. The
13 Environmental Protection Agency, I believe, also
14 accepts the linear no threshold assumption for
15 radiation in cancer.

16 Q You mean for Superfund risk assessment
17 purposes?

18 A Yes.

19 Q Aren't Superfund risk assessments simply
20 screening estimates used by EPA to prioritize risk
21 relative to one and up in order to make remedy
22 decisions?

23 A Well, that's -- yeah, those are these exact
24 Superfund assessment documents, but in terms of EPA's
25 general policy on a dose risk assessment associated

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1 **with radiation, I believe their assumption is the**
2 **linear no threshold relationship between radiation and**
3 **risk of cancer.**

4 Q Dr. Hu, did you hear my question or was it
5 dropped?

6 A I think I heard your question. I think you
7 were specifically saying is it -- you know -- is that
8 the -- well, anyway -- repeat the question and I'll
9 try to answer the best I can.

10 Q Let me try again. Aren't EPA risk
11 assessments simply risk screening exercises for the
12 purpose of comparing one risk to another or to some
13 line for the purpose of making remedy decisions?

14 MR. SOPER: Asked and answered.

15 A They are but they are also based on
16 assumptions that the EPA typically describes in
17 associated documents.

18 Q (By Mr. Beck) Right. And the associated
19 documents that matters where EPA describes its
20 assumptions is known as the risk assessment guidance
21 for Superfund or RAGS; is that correct?

22 A That's one of them, yes.

23 Q Have you reviewed the risk assessment
24 guidance for Superfunds in your work in this case?

25 A Not specifically, no.

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1 Q What is I linear energy transfer radiation?

2 A **Radiation that imparts a lot of energy in**
3 **its course as part of its effects on biological**
4 **tissue.**

5 Q And just to define the term we've used
6 before, what is ionizing radiation?

7 A **What is what?**

8 Q Ionizing radiation.

9 A **Ionizing radiation is radiation that energy**
10 **capable of causing ionization.**

11 Q If we go over to page 7 of Exhibit 1, I'm in
12 your expert report still, and look for a paragraph
13 that begins in terms of radionuclides and residents
14 impacted.

15 A **Okay.**

16 Q Was -- was the word resident in that
17 sentence an -- an error?

18 A **Yes. I should have just said in terms**
19 **radionuclides and Dr. Czapla's exposure.**

20 Q You're not calculating -- you're not
21 assessing risk in this report to any resident near the
22 Westlake Landfill, are you?

23 A **No.**

24 Q I'll -- I'll leave out of my question the
25 issue of whether Marc Czapla was trespassing or

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1 invited, and let me just ask it this way -- and that's
2 if he was there. Let me ask it this way, do you
3 understand that Marc Czapla's testimony is that he
4 visited rather than resided at the Westlake Landfill
5 site?

6 MR. SOPER: Object to form and move to
7 strike the speech beforehand.

8 A **That comports with what my understanding is.**

9 Q (By Mr. Beck) What do you understand the
10 surface -- well, what do you understand the portion or
11 portions of the Westlake site to be where Mr. Czapla
12 claimed he played?

13 A **I've seen photographs and some diagrams, but**
14 **I don't recall reviewing that any time recently so I**
15 **have no memory of that.**

16 Q Let me ask it this way. If I refer to a
17 part of a landfill as being closed and covered, do you
18 know what I mean by that? Are we communicating if I
19 use that phrase?

20 A **My basic assumption would be is that it was**
21 **fenced off and covered with something.**

22 Q I didn't say anything about fencing. I'm
23 just saying that as landfills progress, they use up
24 some of the land, finish putting in garbage, put on
25 the cover and move on. If I refer to a landfill being

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1 closed and covered and that's what I mean, will you
2 understand me?

3 **A Okay. I'll take that as an assumption.**

4 Q Thank you. And so my question is: Do you
5 have any understanding whether Marc Czapla claims he
6 played between 1973 and 1978 in any of the landfill
7 that was not closed and covered?

8 **A I don't recall whether that was addressed in**
9 **Dr. Clark's report.**

10 Q And you don't recall whether that was
11 addressed in Marc Czapla's deposition that you read?

12 **A I don't recall.**

13 Q You don't recall whether that was addressed
14 in Marc Czapla's questionnaire that you provided him?

15 **A The only questionnaire I gave him was**
16 **regarding family history of cancer, so no.**

17 Q And you didn't follow up on that question to
18 get a better understanding of where he says he got
19 exposed?

20 **A Well, as I said before, I relied on the**
21 **exposure assessment conducted by James Clark and**
22 **Associates.**

23 Q Right, but you didn't follow up on that by
24 asking your own questions about that topic?

25 **A No.**

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1 Q And so do you know simply as a general fact
2 that there are only certain discreet portions of the
3 Westlake site that have been found to contain
4 radioactive material?

5 A I don't know enough to have an opinion on
6 that.

7 Q All right. It's not an opinion question.
8 You don't know if there are or not?

9 A I don't.

10 Q Do you have any information about how many
11 acres of the Westlake Landfill site have been found to
12 contain radioactive materials?

13 A Not that I recall.

14 Q Do you have any information on when those
15 specific areas of the Westlake site were closed and
16 covered?

17 A Not that I recall. I mean, like I said, I
18 read the reports regarding this site, I believe, in
19 the past, but I can't recall them. It's been quite
20 some time.

21 Q Do you have any reason to think that -- that
22 the areas of the landfill where radioactive materials
23 were eventually found were actually used for more
24 landfilling after they were closed and covered?

25 A I'm not aware of any information on that.

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1 Q Do you have any reason to think that it
2 would be bulldozers and trucks driving over an area of
3 a landfill that's closed and covered as opposed to
4 areas of the landfill that are open and operating to
5 dispose garbage?

6 MR. SOPER: Objection. Outside the scope.

7 Asked and answered.

8 A **I don't have an opinion on it.**

9 Q (By Mr. Beck) Not an opinion question. It's
10 a fact question. Do you have any information on that?

11 A **No.**

12 MR. SOPER: Object to form.

13 Q (By Mr. Beck) Do you know whether or not the
14 areas of Westlake Landfill which were closed and
15 covered -- strike that. I'm going to start over.

16 Dr. Hu, do you have any information on
17 whether the areas of Westlake Landfill for Mr. Czapla
18 claims to have played between 1973 and 1978 were
19 vegetated at any point during those years?

20 A **I don't recall.**

21 Q Do you have any information about whether
22 any portion of the area where Mr. Czapla claims to
23 have played was actually occupied by a building during
24 some of the years when he claims he played in the
25 dirt?

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1 **A I don't know.**

2 **Q**Have you seen any data with respect to
3 radioactive material at the Westlake Landfill
4 collected before 1976 or reported before -- before
5 1977?

6 **A Can you repeat that question, please?**

7 **Q**Sure. Have you seen any data concerning
8 surface radioactive materials at the Westlake Landfill
9 which were collected before 1976 or reported before
10 1977?

11 **A I may have but I don't recall.**

12 **Q**I haven't so if you think of one, will you
13 please tell me, please?

14 **A Sure.**

15 **Q**Thank you. Do you know of anyone who came
16 out and checked the Westlake Landfill for radioactive
17 materials prior to May of 1976?

18 **A I don't recall.**

19 **Q**Now, I'd like to go in your report,
20 Exhibit 1, on page 7 to the first full paragraph which
21 is the one that contains that term resident that we
22 decided shouldn't be there. Do you know which I'm
23 talking about?

24 **A Yes.**

25 **Q**In terms of radionuclides and residents, can

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1 you see that?

2 **A Yes.**

3 Q So it says in terms of radionuclides and
4 residents impacted by the Westlake Landfill exposures,
5 the analysis conducted by Dr. Clark indicates that
6 Dr. Czapla was likely subject to radionuclide
7 exposures to a significant degree through inhalation
8 and ingestion and, in parentheses you say factor A,
9 and that the magnitude of the doses received
10 particularly in the past, likely exceeded background
11 levels to a significant degree, in parentheses you say
12 factor B. Have I read that sentence -- that sentence
13 accurately?

14 **A Yes.**

15 Q And so when you say background levels, are
16 you referring to background levels of radioactivity in
17 surface soil?

18 MR. SOPER: Well, I object to that. You're
19 asking him about Dr. Clark's report, not letting him
20 look at Dr. Clark's report.

21 MR. BECK: Okay. Well, You're wasting time
22 and we'll deduct from your seven hour -- we'll add it
23 to your seven hours.

24 Q (By Mr. Beck) Dr. Hu, can you answer the
25 question, please?

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1 MR. SOPER: At what? Add to your seven
2 hours when he looked at his reliance material?

3 MR. BECK: That is a suggestive objection.
4 Stop.

5 MR. SOPER: No. These questions are
6 improper when you're not letting him look at things.

7 MR. BECK: I didn't not let him look at
8 things, but I'm not going to waste my seven hours for
9 him to go back and reread Clark. I'm asking a simple
10 question that asks what he can tell me and you don't
11 get to interrupt and tell him to go read things and
12 slow this down.

13 MR. SOPER: I'm not telling him to read
14 anything. I'm -- I'm saying he should be able to look
15 at the reliance material.

16 MR. BECK: Just stop talking.

17 MR. SOPER: I -- I will object.

18 MR. BECK: Thank you. You have.

19 Q (By Mr. Beck) Dr. Hu, when you say in your
20 sentence of your report that certain radio ac --
21 radionuclide exposures exceeded background levels to a
22 significant degree, I'm trying to find out what you
23 mean in your words by the -- by the expression
24 background levels. Does that refer to the background
25 radioactivity levels of normal surface soil?

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1 MR. SOPER: Same objections.

2 A I'm not sure I was quoting Dr. Clark's
3 report and have to go back to his report to refresh my
4 memory as to his definition of background levels.

5 Q (By Mr. Beck) Do you know, without going back
6 to do a reading, what Dr. Clark meant when he said that
7 Dr. Czapla was exposed to radionuclides by inhalation
8 and ingestion that exceeded background levels to a
9 significant degree?

10 A Like I said, I'd have to go back and see
11 whether he meant background levels as background in
12 so -- as you said, normal soil that is soil that's
13 not, you know, at a contaminated site or whether he
14 meant background levels soil that was, let's say, you
15 know, a mile away or half mile away from the -- the
16 contaminated site. So it's several different ways you
17 could define background levels. I'm not exactly sure
18 which definition he used. I'd have to look at his
19 report to refresh my memory.

20 Q You didn't put that question to Dr. Clark?

21 A Not in this particular case, no.

22 Q You wrote your report. You finished your
23 report on Friday, right?

24 A Yes.

25 Q And this is Monday?

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1 **A Yep.**

2 **Q**So when you said in your report in the
3 sentence we just read exceeded background levels to a
4 significant degree, did you know what you meant by
5 background level?

6 **A I was quoting Dr. Clark on that particular**
7 **point, and like I said, I can't remember exactly how**
8 **he defined background levels.**

9 **Q**So let me ask you this. Do you know that
10 all sorts of soil around the globe contain greater or
11 lesser degrees of radioactivity --

12 **A Yes.**

13 **Q**-- that it's everywhere?

14 **A Yes.**

15 **Q**And you've given me a couple of options for
16 what Dr. Clark might have meant. One was background
17 soil -- values for radioactivity in soil everywhere or
18 background level in soil from a particular location
19 that might have been a half a mile or mile away. Did
20 I get that right?

21 **A Correct.**

22 **Q**And are there any other candidates that
23 you're thinking of for what Dr. Clark meant by this
24 expression you quoted without quote marks in your
25 report of background level?

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1 **A No.**

2 MR. SOPER: Objection. Calls for
3 speculation.

4 Q (By Mr. Beck) Dr. Hu, is there background
5 ambient radioactivity in the world?

6 **A Ambient is a general term referring to the**
7 **environment. It's actually typically used for**
8 **airborne levels. So is that what you mean by ambient**
9 **or what?**

10 Q No. No. I mean, if a person walks around
11 the earth any place, they're going to be exposed to a
12 certain amount of radioactivity; is that correct?

13 **A Yes.**

14 Q And for your report or from general
15 knowledge, do you know what the background radioactive
16 exposure is in the United States or in this area
17 expressed as millirems per year?

18 **A I'd have to go back and look at some charts**
19 **to refresh my memory on that.**

20 Q If I say that the background radiation
21 exposure exceeds 600 millirems per year, do you know
22 if that's right or wrong?

23 MR. SOPER: And I object to there not being
24 a time in that you're talking about, Bill.

25 MR. BECK: It doesn't change a lot over

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1 geologic history, Jon.

2 MR. SOPER: Well, I object --

3 A That seems high --

4 MR. SOPER: -- foundation.

5 Q (By Mr. Beck) Go ahead, Dr. Hu.

6 A It seems high to me and I think by
7 background in this situation, you're actually talking
8 about what a typical individual experiences which not
9 only includes background radiation from soil and food
10 and whatever but also radiological tests, et cetera,
11 et cetera. So I'm -- I am -- I don't really know what
12 definition you're using for background, but if you
13 mean background just from soil, that I believe is a
14 high figure.

15 Q Right. I'm not talking about that. I'm
16 saying average person walking around they might have a
17 spouse, they might live in a brick house, they might
18 be subject to the cosmic rays that all of us
19 experience outside, but the background radiate --
20 radioactivity dose per year is on average in excess of
21 600 millirems, and the question is do you know if
22 that's right or wrong?

23 MR. SOPER: Foundation. Objection.

24 A That still seems high. Yeah, that still
25 seems high because you did not mention typical

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1 **radiological procedures which I believe are included**
2 **in the usual estimates of so-called background by, you**
3 **know, standard radiology safety manuals.**

4 Q (By Mr. Beck) And let me ask you, Dr. Hu, I
5 know you're -- you're experienced at giving
6 depositions, but a reminder is always good. It's
7 important for Jonathan to get his objections on to the
8 record, and the court reporter can't do that if you're
9 both talking. So if you hear him start to speak, if
10 you could just hold up and give your answer after John,
11 that will help us make a good record here. Is that
12 okay?

13 **A My apologies.**

14 Q And I'm -- I'm not scolding. I forget all
15 the time, and I've taken depositions for a while.

16 So as I read this sentence that we just read
17 on page 7 of your report and try to dissect a little
18 bit, do you see that after you say that the exposures
19 likely exceeded background levels to a significant
20 degree, you've got factor B. Have I said that
21 accurately?

22 **A Right.**

23 Q And is factor B a Bradford Hill criterion or
24 something else?

25 **A No, that's the fact that the -- the basic**

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1 estimate made by Dr. Clark who said he was exposed to
2 these radionuclides and likely absorbed into his body
3 which was sort of factor B --

4 Q Factor B?

5 A -- that's articulated in the paragraph
6 above.

7 Q Okay. Got it. I see it. Thank you. So
8 with respect to alpha particles, the same paragraph,
9 you say alpha particles are not -- quote, are not very
10 penetrating and can be stopped in the outer layers of
11 skin. Have I read that correctly?

12 A Well, it's the alpha particle associated
13 radiation that is not very penetrating. It's not the
14 alpha particles themselves.

15 Q Okay. That's -- that's why you don't try to
16 estimate how much dirt Marc Czapla allegedly got onto
17 his body playing on the landfill day after day, and
18 months after months, year after year, but rather you
19 calculate what gets inside his body either through
20 ingestion or inhalation; is that right?

21 A Correct.

22 MR. SOPER: Object to form.

23 A Oh, sorry.

24 MR. SOPER: Hey, Bill, can we take another
25 quick break? I just got texted a picture that a tree

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1 limb fall off at my home so I need to make a phone
2 call about that real quick.

3 MR. BECK: That's not a problem.

4 VIDEOGRAPHER: Going off the record at
5 1:46 p.m.

6 (A break was taken.)

7 VIDEOGRAPHER: We're back on the record at
8 1:56 p.m.

9 Q (By Mr. Beck) Dr. Hu, after the break, are --
10 are you ready to go?

11 A **Yep. Although I'm getting hungry, so I**
12 **think we have another hour, though.**

13 Q So just a housekeeping detail, did you know
14 that there was a deposition notice with an Exhibit A
15 that contained a list of things that we were asking to
16 be produced for your deposition?

17 A **Yes.**

18 Q And did you endeavor to produce those to Mr.
19 Soper so he can share them with us?

20 A **I did.**

21 Q The one category I saw in that Exhibit A
22 that I didn't see any of in the production was
23 invoices. Have you rendered any invoices for your
24 work on the review of information, the report, for
25 this deposition up to this point?

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1 **A Not yet.**

2 **Q**Approximately how much time do you think you
3 have into it up to now before today?

4 **A Have to go through my records, but I'd say**
5 **maybe -- there were a lot of records but 20 -- 24**
6 **hours, something like that.**

7 **Q**And for the time you spent reviewing
8 information preparing your report, what -- what are
9 you charging in this case?

10 **A \$600 an hour.**

11 **Q**I'm sorry, I didn't hear you?

12 **A \$600 per hour.**

13 **Q**And is there a different rate you plan to
14 try to charge for your deposition than that?

15 **A Yes. And I apologize if you didn't get the**
16 **rate sheet, but I charge \$1,000 per hour deposition**
17 **time.**

18 **Q**Let's go back in your report, please, which
19 is Exhibit 1 back to page 7 and back to this paragraph
20 which starts with the words in terms of radionuclides
21 and residents, and I want to get about two-thirds of
22 the way down that paragraph and ask you to look at a
23 sentence that says once they enter the body such alpha
24 emitting radionuclides. Do you see where that is?

25 **A Yes.**

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1 Q And you state, quote, once they enter the
2 body such alpha emitting radionuclides could be
3 expected to increase a risk of causing cancer, since
4 as noted earlier, the evaluations of all internally
5 deposited radionuclides that emit either alpha or beta
6 particles were declared by the International Agency
7 for Research on Cancer to be carcinogenic, in
8 parentheses, i.e. group 1 carcinogens, closed
9 parentheses, based on data in human and in
10 experimental studies. Have I read that accurately?

11 A **Yes.**

12 Q And are you relating the conclusion of IARC
13 on that, or are you expressing your own conclusion,
14 too?

15 A **That's the conclusion of IARC.**

16 Q (By Mr. Beck) And IARC is the -- is that
17 correct?

18 A **Yes, IARC is the International Agency for
19 Research on Cancer.**

20 Q Thank you. Now, did you in performing your
21 research in this case look for epidemiologic or case
22 studies associating specifically the thorium-230 with
23 an increased incidence of kidney cancer?

24 A **I look for studies of thorium in particular
25 including thorium-230 and the -- and the incidence of**

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1 **renal cancer, yes.**

2 Q And other than thorotrust studies, did you
3 find any particular studies that you concluded
4 associated thorium exposure through inhalation or
5 ingestion with an increase incidence of kidney cancer?

6 A Not really. I mean, the -- the problem is
7 that it's very difficult studies that select --
8 selectly identify thorium as the exposure. There are
9 studies that have, you know, workers exposed to a -- a
10 mixture of radionuclides but that doesn't really allow
11 you to focus specifically on thorium. So the
12 thorotrust studies, for better or for worse, represent
13 perhaps the only rigorous and available body of
14 literature to focus specifically on thorium in human
15 beings.

16 Q Understood. So thorotrust was a liquid
17 colloidal suspension containing thorium particles that
18 a person would drink in order to provide contrast for
19 medical imaging; is that right?

20 A **That's correct.**

21 Q And so people heard the phrase barium enema
22 as sort of that, you -- you -- you drink something
23 radioactive and it shows up on an image?

24 A **More or less, yes.**

25 Q Did you do any research to find out the dose

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1 an average patient would receive drinking this thorium
2 suspension before an imaging to determine just how
3 much of a dose this person is ingesting?

4 **A I've seen those figures but I can't recall
5 them there.**

6 Q Did you make any effort to compare that dose
7 to the dose Clark calculates that he says was either
8 ingested or was inhaled or was absorbed by being near
9 something radioactive, all of those combined? Did you
10 do any of those comparison between the thorium and the
11 thorotrast study and the thorium that Clark says
12 exposed Dr. Czapla in this case?

13 **A No, I didn't feel that was necessary. Since
14 this is a general causation question, I was using that
15 literature to address.**

16 Q So you have a background in epidemiology in
17 addition to being a medical doctor; is that true?

18 **A I have a doctoral degree in epidemiology.**

19 Q And there's a phrase that is sometimes used
20 among toxicologists and epidemiologists. It's
21 colloquialism but it's the dose is the poison. You've
22 heard that phrase?

23 **A Of course.**

24 Q Are there some things that lower doses are
25 not harmful to a human at all but at higher doses can

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1 be harmful to a human?

2 **A Yes.**

3 Q Are there features of the way that the body
4 reacts to -- I'm going to strike that.

5 Sometimes can you drink something that is
6 not particularly good for you, but the body takes care
7 of it and it never causes you any harm at all?

8 MR. SOPER: Object to form.

9 **A That's a pretty broad generalization, but I**
10 **would say that's probably true.**

11 Q (By Mr. Beck) And what are some of the
12 processes in the body that help prevent harm from
13 occurring as a result of that?

14 **A Well, first, here's the question of whether**
15 **the harmful substances absorbed at all. Some things**
16 **are passively absorbed. Others require distinct**
17 **molecular mechanisms that is transporter proteins**
18 **to -- to bring in the harmful substance into the body.**
19 **Then once the so-called harmful substance is in the**
20 **body, there are mechanisms to try to excrete it.**
21 **Liver has an entire reticuloendothelial system to try**
22 **to isolate harmful things and throw it into bile, and**
23 **you'll excrete it and your excrement. The kidney will**
24 **try to excrete substances. Unfortunately, it often**
25 **means that the kidneys exposed to quite a bit of**

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1 **whatever the harmful substance is.**

2 And then it concentrates in the urine which
3 then makes the exposure even higher to the kidney and
4 the collecting ducts and the rest of the urinary
5 execratory system, and then, you know, liver has a
6 detoxification mechanism to try to molecularly
7 transform the harmful substance and to a less harmful
8 substance or a substance that's more polar and -- and
9 able to be absorbed in water, therefore, excreted by
10 the kidneys, then the body has, you know, various
11 barriers.

12 There's the blood-brain barrier that is an
13 extra layer of protection to try to protect the brain
14 from things circulating in the body that might be
15 harmful to the central nervous system and so forth.

16 Q Did you read any studies that more on the
17 question of cancer risk from exposure to radionuclides
18 that you did not include in your report and materials
19 supplied to Mr. Soper? I'm talking about in your work
20 on this case.

21 A **That was pretty vague question. Can you try**
22 **to --**

23 Q Sure. In working -- sure. In working on
24 this case --

25 A **Yes.**

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1 Q -- did you review some studies bearing on
2 radioactivity and kidney cancer that you did not cite
3 in your report and give to Mr. Soper?

4 A **Yes.**

5 Q And can you remember any of them that you
6 read but didn't use?

7 A **I think there was at least one thorotrust**
8 **study which did not remark on whether kidney cancer**
9 **was elevated or not or did not find increased renal**
10 **kidney cancer, and I don't remember which of the**
11 **thorotrust studies that are out there that was but**
12 **I've read those.**

13 Q Are you familiar with what are sometimes
14 called the atomic bomb blast survivor study?

15 A **Yes.**

16 Q Did you review any of those for your work on
17 this case?

18 A **No, because the atomic bomb survivors were**
19 **mostly exposed to gamma radiation, and we're trying to**
20 **specifically look at this question of radionuclides so**
21 **I'm not sure that I found that relevant. Certainly**
22 **radi -- Radiation Effects Research Foundation which is**
23 **the foundation that specifically created to examine**
24 **the cancer experience after the atomic bombs looked at**
25 **all that. I believe that's included in part of the**

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1 foundation's work and part of what was examined by
2 agencies like IARC to determine that ionizing
3 radiation in general causes kidney cancer.

4 Q Are you familiar with what are sometimes
5 described as the nuclear plant worker studies to
6 assess the effects of long term low dose exposure to
7 people and whether or not that exposure is related to
8 particular cancers?

9 A Yes.

10 Q Did you review any of those in your work on
11 this case?

12 A I thought -- I saw some of them, but, again,
13 these are industries where there's exposure to
14 multiple different radionuclides, so it's -- I think
15 it's hard to disentangle whatever might be happening
16 with, you know, other radionuclides or other forms of
17 radiation exposure so I didn't feel that those were as
18 involved.

19 Q So just to this -- this -- this may feel
20 repetitive, but I'm trying to set in the transcript a
21 reference that will make the next question work. And
22 that is you relied on Dr. Clark's calculations, and
23 your understanding is that Dr. Clark relied on Marc
24 Czapla's description of how often he went to the
25 landfill or said he went to the landfill and how long

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1 he says he stayed; is that all true?

2 A That's among the things that he relied upon,
3 yes.

4 Q Did you write anything in this report about
5 the phenomenon referred to as we recall bias?

6 A I did not.

7 Q Are you familiar generally with the
8 phenomenon of recall bias?

9 A Yes.

10 Q Have you written any scholarly writings that
11 address the phenomenon of recall bias?

12 A I mean, Counselor, I've published over 300
13 research reports. I don't think I discussed recall
14 bias as a methodology, but I may have discussed recall
15 bias or the potential for recall bias in setting of a
16 particular epidemiology study. I just don't remember.

17 Q You can't -- you can't steer me in the
18 direction of one other than saying read all 300, you
19 may find it?

20 A Right. Not a question that I've considered,
21 and I can't think of anything right off the top of my
22 head.

23 Q Do you try to stay up on the literature as
24 it comes out when it's specific to the phenomenon of
25 recall bias?

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1 **A** Well, I mean, I think, you know, there's
2 billions of articles published every year in
3 epidemiology and epidemiologic methods, but I believe
4 I -- you know, I understand what recall bias is. And
5 when we conduct research we try to understand the
6 potential for that and take that into account either
7 in design study or the interpretation of the results.

8 **Q** Have you read the study that was published
9 with regard to assessing the phenomenon of recall bias
10 in the specific context of brain cancer patients who
11 were asked about their cell phone usage and then their
12 answers were compared to the records of their actual
13 cell phone usage?

14 **A** I don't recall reading that study.

15 **Q** Do -- do you have any recollection of just
16 how much they overstated just from hearing about it?
17 Anything -- any recollection of how much they
18 overstated their cell phone usage as compared to the
19 actual records?

20 **A** **No.**

21 MR. SOPER: Lacks foundation. Calls for
22 speculation.

23 **Q** (By Mr. Beck) Dr. Hu?

24 **A** **No, I don't.**

25 **Q** Do you agree professionally that recall bias

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1 is real or can be real?

2 **A Yes.**

3 Q And have you made any assessment in this
4 case up to now of whether recall bias is a significant
5 uncertainty that should be taken into account in
6 assessing Dr. Clark's calculations and their
7 importance?

8 **A I have not.**

9 Q Is one of the factors that you considered in
10 your report a factor of plausibility?

11 **A Yes.**

12 Q And as you used it, what did you mean with
13 reference to plausibility?

14 **A Plausibility refers to there being a**
15 **mechanism by which a punitive risk factor could**
16 **actually cause the effecting question. So, for**
17 **instance, it has been shown that cigarette smoking**
18 **causes lung cancer. Well, cigarette smokers typically**
19 **have yellow fingers and because they're smoking and**
20 **nicotine or whatever tar residue gets on their**
21 **fingers, and one of the examples we talk in class is,**
22 **well, can yellow fingers cause lung cancer and there**
23 **is an association?**

24 **You study people who have yellow fingers --**
25 **chronically have yellow fingers versus people who**

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1 don't have yellow fingers, they'll have an elevated
2 risk of cancer so there's a causal relationship, and
3 the answer is obviously is it's not -- it's not yellow
4 fingers. It's the fact that it's a proxy for someone
5 being a smoker because there is no biological
6 mechanism by which typically having yellow fingers can
7 give you lung cancer.

8 So in this case, you know, trying to
9 understand the carcinogenic potential of thorium and
10 radium is understanding that these are the
11 radionuclides, there are alpha emitters, they can get
12 in the body. The studies clearly shows that it can be
13 distributed through the body into the kidney, excreted
14 in the kidney.

15 They can -- they can actually translocate
16 and be deposited in the kidney, and those are all
17 scientific realties, if you will, that underpin a
18 mechanistic pathway by which, yes, it is plausible
19 that these radionuclides can cause kidney cancer.

20 Q Thank you for your answer. You didn't
21 conduct an assessment in this case of the plausibility
22 of Marc Czapla's story, correct?

23 A No. No.

24 MR. SOPER: Object to form.

25 A Not my role in this case.

EXAMINATION BY MR. BECK

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1 Q (By Mr. Beck) So with respect to the
2 discussion that you just had of the factor of
3 plausibility, let's go back to your report on page 8.

4 MR. BECK: Melissa, when that's up, let me
5 know, please.

6 MS. LOVE: We're there, Bill.

7 MR. BECK: Thank you.

8 Q (By Mr. Beck) Dr. Hu, can you look at the
9 paragraph in which you say, thus, the direct exposure
10 of kidney tissue to thorium associated and radium
11 associated carcinogenic alpha particles fulfills the
12 criterion of plausibility. First, have I read that
13 accurately?

14 A **Yes.**

15 Q And you capitalize plausibility just to
16 signify that that's one of the criteria that you're
17 looking at?

18 A **Correct.**

19 Q And then immediately after that you say
20 second, although it is acknowledged that relatively
21 little data exists on the health effects of thorium in
22 either humans or animals based on inhalation, oral, or
23 dermal exposure, information can be drawn from the
24 prospective epidemiologic study conducted on subjects
25 who received intravenous thorotrast. Have I read that

EXAMINATION BY MR. BECK

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1 accurately?

2 **A Well, you said information. The word I used**
3 **was actually inference.**

4 **Q** Thank you. Let me reread it. Second,
5 although it is acknowledged that relatively little
6 data exists on health effects of thorium in either
7 humans or animals based on inhalation, oral, or dermal
8 exposure, inference can be drawn from the prospective
9 epidemiologic studies conducted on subjects who
10 received intravenous thorotrast. Now did I get it
11 right?

12 **A Yes.**

13 **Q** Thank you. And so just to define terms,
14 what is a prospective epidemiologic study?

15 **A It's a study in which the subjects are**
16 **followed over time beginning when the -- when the**
17 **study period is initiated, and the -- the exposure is**
18 **documented and the health effects then occur later in**
19 **time which allows you to appreciate that there's a**
20 **sequence. There's the exposure occurs at one time and**
21 **a health effect occurs later.**

22 **Q** And so will -- will you give me a thorotrast
23 study refers to a high concentration of thorium that
24 is directly ingested into the human body?

25 **A Yes, I would agree with that.**

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1 Q And in that same paragraph you describe a
2 study of Swedish patient -- patient and you say,
3 quote, in this regard in a study of 432 Swedish
4 patient -- patients exposed to radioactive thorotrast,
5 a significantly elevated risk of kidney cancer was
6 observed. In this population, seven cases of kidney
7 cancer were observed yielding a standard incidence --
8 carries over the next page -- ratio of 3.4, 95 -- in
9 parentheses you say 95 percent confidence interval,
10 1.4 to 7.0. So I want to talk about that study.
11 First, did I read that accurately?

12 A **Yes.**

13 Q And in that study, was there any information
14 about the thorium concentration of the thorotrast to
15 which the 432 Swedes had been exposed of whom seven
16 contracted kidney cancer in their lifetimes?

17 A **I'm sure there was some information about**
18 **the -- about the dosing, but I don't recall what it**
19 **was.**

20 Q And then the reference to a standard
21 incidence ratio, is that just the number of cases
22 divided by the number of study patients?

23 A **That's correct. And standardized to the age**
24 **distribution of both the patients and the reverent**
25 **population.**

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1 Q And with those seven -- okay. So in the
2 parenthetical, you refer to a 95 percent confidence
3 interval of 1.4 to 7.0. Is that percent -- is the 1.4
4 a percent 7.0 percent --

5 A No. It's just -- it's a ratio. It's the --
6 it's the -- basically as what's been referred to as
7 the incidence ratio, standardized incidence ratio. So
8 the point estimate is 3.4, and the 95 percent
9 confidence interval which is defined as the interval
10 in which the true so-called incidence ratio likely
11 occurs with 95 percent probability is between 1.4 and
12 7.0.

13 Q Let me try --

14 A The central estimate.

15 Q The 3.4 is the percentage of the patients
16 who had kidney cancer; is that right?

17 A No. No. No. It's the ratio of the number
18 of people who developed the cancer versus the number
19 that would have been expected if the kidney cancer
20 rates that occur in the general population were
21 applied to these however many 432 Swedish patients.

22 Q So that the expected percentage was
23 3.4 percent; is that right?

24 A No. The expected ratio --

25 Q I'll withdraw the question.

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1 **A** -- be 1 --

2 **Q** I'll withdraw the question.

3 **A** -- 1.0, in other words, the ratio of the
4 **observed** --

5 **Q** I'll withdraw the question in response to
6 your chuckling.

7 So is the 3.4 the expected numbers -- number
8 of kidney cancers in the 432 patients --

9 **A** **No. No.**

10 **Q** -- without thorotrast?

11 **A** **No. The expected number is probably**
12 **somewhere around 2.** I didn't list it right here. The
13 **3.4 is simply the ratio of observed cases over the**
14 **number of expected cases.**

15 **Q** Right.

16 **A** **So it's a -- it's not a percentage.**

17 **Q** Understood. So you're saying the standard
18 incidence ratio is the ratio between 7 and the
19 background kidney cancer risk?

20 **A** **Well, the 95 percent confidence interval --**

21 **Q** Right, I'm not --

22 **A** **-- true standardized incidence ratio is**
23 **somewhere between 1.4 and 7.0.**

24 **Q** Right. But when you wrote the word -- when
25 you wrote the word standard incidence ratio of 3.4,

EXAMINATION BY MR. BECK

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1 that 3.4 is 7 divided by the expected number of cases
2 based on background kidney cancers, true?

3 **A Based on background kid -- kidney cancer**
4 **rates applied to the 432 Swedish patients and**
5 **standardized for age.**

6 Q Thank you. Now, there's a second study
7 described right after that in the same paragraph
8 referring to radium and 899 patients who were treated
9 with radium for ankylosing spondylitis; is that
10 correct?

11 **A Yes.**

12 Q Among other conditions?

13 **A Yes.**

14 Q So my question's going to be how important
15 was radium in Dr. Clark's calculations if you can tell
16 me without going to read it?

17 **A I'm not sure. You know, I think he was**
18 **looking at the sum of radionuclides, but I can't**
19 **remember how radium might have played into or what --**
20 **what proportion radium might have played into his**
21 **calculations.**

22 Q And when you say that the 899 patients in
23 that second study were treated with radium, what does
24 that mean?

25 **A I believe they were injected with radium as**

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1 part of the treatment protocol for these conditions.

2 Q And how did that radium isotope compare to
3 the radium isotope Dr. Clark estimated, primary one?

4 A I don't recall. I'd have to take a look at
5 the paper and Dr. Clark's paper and try to -- to try
6 to answer that question accurately.

7 Q And how did -- how does the radioactivity,
8 an amount of the radium that was injected in those 899
9 patients, compare to the radioactivity as the radium
10 that Dr. Clark assessed as having been inhaled for or
11 ingested if you remember?

12 A I'm sure it's higher, but I couldn't
13 quantify how much higher.

14 Q Don't you need to know that comparison in
15 order to determine whether that study supports
16 strength of association and specificity or not?

17 A Well, again, this is a general causation
18 question. Does this exposure cause cancer or not or
19 this particular type of cancer? The toxicology animal
20 studies, for instance, are done all the time using
21 doses much higher than are countered in humans just to
22 see whether a substance can cause the effect of
23 interest. Then the rest of it relates to, you know,
24 the specific cases and other considerations, but as a
25 general causation matter, I think these are perfectly

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1 usable studies for this -- for this question
2 particularly since as we discussed earlier, there is
3 no threshold below which radiation is not known to be
4 a carcinogenic risk.

5 Q You're saying according to the studies that
6 you cite, there is an assumption that there is no
7 threshold below which exposure to radiation is a
8 cancer risk, correct?

9 A I don't think the studies themselves make
10 any assumption. They simply report the epidemiologic
11 data as they see it. I think in interpreting those
12 studies and their relevance, I think it's important to
13 appreciate that radiation associated cancers are not
14 known to have a threshold below which there's no risk.
15 So, you know, thorium injected or radium injected
16 doesn't cause any type of cancer in the world.
17 They -- causes some cancers and to understand what
18 those cancers are that are significantly associated
19 with these exposures helps advance our state of
20 knowledge of general causation. Can these
21 radionuclides cause cancer X, Y, or Z?

22 Q And I think I understand what you're saying
23 about general causation, but let me put it another
24 way. Are you aware of any study that says that
25 exposure to thorium or radium or both in the activity

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1 levels projected or estimated by Dr. Clark did cause
2 kidney cancer in a person?

3 MR. SOPER: Form and foundation.

4 **A May I answer?**

5 **Q**(By Mr. Beck) Yes, please. You can answer
6 them all.

7 **A Yeah, sure. I mean, no studies exist simply**
8 **because there is no exposure scenario like that that**
9 **could be practically studied. You know, a cohort of**
10 **people with really low exposures, then you have to**
11 **follow tens of thousands in order to have a**
12 **statistical power to even see such a, you know,**
13 **necessary, you know, increase in an epidemiologic**
14 **study. So it's, you know -- no, those studies don't**
15 **exist.**

16 **Q**I hear you but didn't the two studies that
17 you cite in this paragraph, the thorotrast ingestion
18 study and the radium injection study, both lack
19 statistical power because the sample sizes were so
20 low?

21 **A Well, they somewhat do which is why it was**
22 **quite impressive that they saw these kinds of**
23 **increases in cancer even though the expected numbers**
24 **of cancer were relatively low.**

25 **Q**And let me ask you this. Can you identify

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1 any studies which on an epidemiologic basis find a
2 statistically significant increase in kidney cancer
3 occurrence at the levels of radiation -- I'm sorry of
4 thorium and radium exposure calculated by Dr. Clark or
5 lower?

6 MR. SOPER: Form and foundation. You can
7 answer.

8 **A Yeah, I'm not aware of any studies that even
9 examine that particular question.**

10 Q (By Mr. Beck) Thank you. So is this there --
11 since you're just on general causation and it's part of
12 your report, all you're trying to find out is is there
13 some epidemiology out there that says to me, you,
14 Dr. Hu, that exposure to some level of thorium and some
15 level of radium can specifically contribute to an
16 increased incidence of kidney cancer. Is that all
17 you're able to state?

18 **A It's more or less correct.**

19 Q Now, let's turn to the section of your
20 report on page 9 in which you discuss specific
21 causation for renal cell carcinoma in Dr. Czapla. Do
22 you see that section?

23 **A Yes.**

24 Q I'm interested in the second sentence after
25 you set up the question and that is there is nothing

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1 specific about cancer, its clinical presentation or
2 its pathology, when it develops in an individual that
3 definitely proves its cause. Have I read that
4 accurately?

5 **A I think I said the word definitively which**
6 **is slightly different.**

7 Q Thank you. Let me restate it. Do you say
8 in your report here on page 9, there is nothing
9 specific about cancer, e.g., its clinical presentation
10 or its pathology when it develops in an individual,
11 that definitely prove -- I'm sorry, I got that wrong
12 again -- that definitively proves its cause. With
13 that correction, am I right?

14 **A That's what I wrote. That's what I wrote.**

15 Q And that's -- correct?

16 **A I'm sorry?**

17 Q That's what you believe?

18 **A Well, I guess, you know, now that we're**
19 **talking about it, the -- the possible exception is**
20 **mesothelioma which is an aggressive form of cancer of**
21 **the lining of the lungs for which almost all cases**
22 **that have been reported have been related to asbestos**
23 **exposure.**

24 Q All right.

25 **A There's a little bit of concern about some**

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1 other, you know, pleural irritating exposures, but I
2 would say mesothelioma is the one possible exception
3 to that statement.

4 Q Okay. So except for mesothelioma, there's
5 nothing about cancer when it develops in an individual
6 that definitively proves it caused neither clinical
7 presentation or pathology, correct?

8 A Correct. Well, now that I think about it --
9 I'm sorry -- uh oh -- hold on. Okay. So, yes, there
10 are some forms of cancer in which there are cytogenic
11 tests which can identify what can be thought of as a
12 genetic cause of cancer so I guess I should
13 acknowledge that.

14 Q So let's get back to this case. There's
15 nothing specific about Marc Czapla's cancer, his
16 clinical presentation, or its pathology that de --
17 that definitely proves its cause, correct?

18 A Right.

19 Q And there are also no tests that have been
20 developed that can identify cause in that way,
21 correct?

22 A Correct.

23 Q Is it fair to say that there are some
24 questions of cancer where to a person of faith, the
25 only person who can answer the question why did this

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1 happen is the person to whom one prays?

2 MR. SOPER: Object to form.

3 **A Is the person one -- what?**

4 Q (By Mr. Beck) I'm sorry, you didn't -- if you
5 didn't --

6 **A Would you repeat the question?**

7 MR. SOPER: I don't think he heard you.

8 MR. BECK: Yeah, let me try again, Jonathan.

9 **A Okay.**

10 Q (By Mr. Beck) Thank you. Dr. Hu, are there
11 some cancers where no human can explain why they have
12 it?

13 **A Sure.**

14 Q And where medicine, and toxicology, and
15 epidemiology, and medical tests, and oncologists, and
16 all of those folks just can't answer the question why
17 this cancer happened that -- that can be true, right?

18 **A Yes.**

19 Q Now, I'd like to go to the next paragraph
20 and I'm particularly interested in this. You say
21 methods have been developed aimed at quantitatively
22 estimating the contribution to the causation of an
23 individual's disease by an individual's exposure to an
24 associated risk factors -- I'm sorry, risk factor
25 single word -- they involve estimating probabilities

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1 of causation and calculating measures such as the
2 attributable fraction of risk associated with being a
3 member of the exposed population. Could you explain,
4 please, what that means as far as I read?

5 **A Well, I just want to signal that I'm aware**
6 **that there are processes for trying to determine**
7 **so-called probability of causation. They typically**
8 **relate to federal efforts to understand the**
9 **compensability of cancer on occasionally other**
10 **outcomes in folks who are exposed to various things,**
11 **and, you know, I wanted to acknowledge that those are**
12 **out there, but, in fact, I don't think they're**
13 **applicable to this case.**

14 Q I hear you. So, for example, if workers by
15 reason of their work on behalf of the government were
16 exposed to a specific radioactive exposures, there are
17 some worker compensation programs that have a
18 structure set up for estimating the likelihood that
19 the exposure at work cause their cancer?

20 A Yes, something akin to that is what these
21 programs try to do.

22 Q And how does that work? How does that
23 assessment of the likelihood of causation or the
24 probability of causation occur in those compensation
25 schemes?

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1 A Well, it's typically some sort of
2 calculation that's amounted that compares to
3 probability of developing the outcome any way in
4 relation to the probability of developing the outcome
5 plus the exposure related probability as well. Those
6 are some of the typical ways of getting at it. As far
7 as I know, there's also quite a bit of literature in
8 the legal and regulatory peer-reviewed scientific
9 literature that, you know, takes these schemes and
10 they're targeted towards federal employees to task and
11 shows that, in fact, that's a gross over
12 simplification of how to actually get at this issue
13 of -- of, you know, attributable risk probability of
14 causation. Regardless, you know, in my opinion, is
15 just not an occasion which these are applicable.

16 Q So have there been occasions when you as an
17 evaluator have used this concept of attributable risk
18 to compare the increment of risk from an exposure to
19 the risk a person already had without the exposure?

20 A Yeah. No, I have not served as a -- either
21 an occupational physician or any of the expert review
22 panels that have attempted to -- to apply these kinds
23 of probability causation instruments in these
24 situations.

25 Q Are you saying you've never done that kind

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1 of analysis in any case? I'm not referring to just
2 compensation cases for federal employees. I'm saying
3 have you never done a comparison of estimated risk due
4 to an exposure as compared to the background risk an
5 unexposed person would have had any way?

6 **A I may have done that in some of the asbestos**
7 **litigation cases. I don't -- I don't actually know.**

8 Q And was that when you were acting in the
9 capacity of an expert witness?

10 **A I think it might have been capacity of**
11 **writing reports. I don't recall being deposed on that**
12 **particular issue ever.**

13 Q I hear you but you were acting in the
14 capacity of an expert evaluator?

15 **A Yes.**

16 Q And in expressing the opinions that you
17 expressed in federal court, you express all of them to
18 a reasonable medical and scientific certainty,
19 correct?

20 **A Yes.**

21 Q And so at the risk of being accused of
22 oversimplification, isn't it true that the increment
23 of risk that Dr. Clark calculates for Marc Czapla from
24 his alleged exposure to the Westlake Landfill is less
25 than 1 percent of an average person's lifetime risk of

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1 kidney cancer?

2 MR. SOPER: Object to form. Foundation.

3 **A Yes. That is true, but it's -- again, it's**
4 **based on using data that are based on average people.**
5 **It doesn't actually take into account this person's**
6 **age of onset, and as Dr. Clark says himself actually**
7 **in the testimony he gave in deposition he believes the**
8 **true exposure to be substantially higher.**

9 Q (By Mr. Beck) And you're talking about what
10 he claimed in deposition --

11 **A Yes.**

12 Q -- not in his report?

13 And you don't know what conversations
14 Dr. Clark may have had with producing counsel off the
15 record during that deposition?

16 MR. SOPER: Object to form. Foundation.
17 That's an improper question.

18 Q (By Mr. Beck) If any?

19 **A No.**

20 Q If he had any, you don't know it?

21 **A I don't know.**

22 MR. SOPER: Same objection.

23 Q (By Mr. Beck) And, Dr. Hu, just to help us
24 make that comparison, though, in the terms that you
25 think are more appropriate, you didn't conduct an

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1 analysis of the risk of contracting kidney cancer by
2 age 47 in a person to compare to the risk calculated by
3 Dr. Clark with respect to Marc Czapla, correct?
4 Correct, you did not?

5 **A No.**

6 Q All right. Let me get out of your report
7 and back into my notes so I can ask my next question.
8 Give me a second, please.

9 MR. SOPER: Bill, just so we're on the same
10 page, we're coming up to our break for the day.

11 MR. BECK: That's fine. We're breaking for
12 your convenience and I'm happy to do it. I just --
13 we'll -- we'll all get a count from the videographer
14 or reporter after the deposition how much of our time
15 we used on the record.

16 MR. SOPER: Okay. That's fine. Just --
17 just want you to be aware that 1:00 Pacific time we'll
18 be -- we'll be breaking.

19 **A Yeah. I thank you for that.**

20 Q (By Mr. Beck) And in order to do that, let
21 me -- actually ask my next question. I'm still on the
22 bottom of page 9 and then carrying over to the top of
23 page 10 of when your report Dr. Hu. You state,
24 however, as with most cases of cancer induced by
25 federal regula -- making precise such estimates is not

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1 possible, and then you express certain uncertainty.

2 Have I read that accurately?

3 **A Yes.**

4 MR. SOPER: Object to form.

5 Q (By Mr. Beck) And on the top of page 10, one
6 of the uncertainties that you identified is limited
7 knowledge of the shape of the dose response curve
8 relating exposures to thorium and radium and renal cell
9 carcinoma; is that true?

10 **A Correct.**

11 Q And that's -- that's an important
12 uncertainty in this case, isn't it?

13 **A It is an uncertainty.**

14 Q And when you refer to the shape of the dose
15 response curve, you make the assumption in your report
16 that exposure to thorium and radium causes a linear
17 increase in kidney cancer risk with no threshold below
18 which there's no added risk, right?

19 **A That is an assumption based on the same
20 assumption being made authoritative bodies like as we
21 said before the bile -- the BIER committee --**

22 Q I hear you.

23 **A -- the International Agency for Research on
24 Cancer, et cetera.**

25 Q Thank you. But going to on what you said on

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1 page 10, you acknowledge that we don't know the actual
2 shape of the dose response curve relating exposures to
3 thorium and radium with renal cell carcinoma. That's
4 one of the uncertainties in this case, correct?

5 **A Correct. I mean, shape could be linear, but**
6 **you don't know what the slope is. I mean, that's**
7 **another, you know, aspect of it. It's unclear.**

8 Q You don't know the slope and you don't know
9 whether or not there's really a threshold because
10 nobody's got a study that answers that question so
11 far, correct?

12 MR. SOPER: Object to the form. Misstates
13 testimony.

14 **A Well, as I said before, there's basically**
15 **the scientific experts believe there is no threshold**
16 **that -- that -- well, you know, the slope calculations**
17 **still in question.**

18 Q (By Mr. Beck) Are you saying scientific
19 experts believe there's no threshold or assume there's
20 no threshold?

21 **A It's a little bit of both. I mean, the**
22 **epidemiology that tries to assess whether there's a**
23 **threshold, and as far as I know is not been able to**
24 **find one, and that's, you know, part of it because**
25 **it's a limitation of epidemiology. You need a**

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1 fantastically large sample size in order to explore,
2 you know, whether there's a threshold below a certain
3 amount of radiation. So it's -- it's just not
4 possible to do wherever. They look for one, they
5 haven't found it.

6 Q And that's why the threshold question
7 remains uncertain today, right?

8 MR. SOPER: Misstates testimony.

9 Q (By Mr. Beck) Isn't that true, sir?

10 A I guess you could say some uncertainty about
11 it.

12 Q And then I want to go to the last part of
13 that sentence, one of the uncertainties you describe
14 is -- I'm going to quote -- the -- the precise
15 quantitative amounts of Dr. Czapla's exposure to
16 thorium, radium, and other radionuclides. Have I read
17 that accurately?

18 A Yes.

19 Q And that's an uncertainty?

20 A Yes. I mean, you know --

21 Q And -- and that's uncertain because it
22 depends on two things. One, it depends on Marc
23 Czapla's description of the frequency and duration of
24 his exposure being accurate, and second it depends on
25 the estimate by Dr. Clark actually described --

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1 describing reality as opposed to assumption; is that
2 fair?

3 MR. SOPER: Object to form.

4 **A That's fair enough.**

5 MR. BECK: If it's okay with you and
6 Jonathan, I'll go ahead and break at this point just
7 because it's a good stopping point, and we're close
8 enough to 1:00 o'clock Pacific to be almost there, and
9 we'll just pick up tomorrow morning at 9:00.

10 MR. SOPER: Bill, he does have a hard cutoff
11 at 2:45 Pacific time tomorrow.

12 MR. BECK: I hear you.

13 MR. SOPER: I don't want to produce him for
14 a third day. So you tell me if you think 9:00 to 2:45
15 is going to give us enough time. If not, you might
16 want to start a little bit earlier. I think it will
17 but --

18 MR. BECK: How about starting at 8:00
19 Pacific instead of 9:00 Pacific. Is that okay with
20 you, Dr. Hu?

21 THE WITNESS: Hold on. Let me check my
22 schedule.

23 MR. BECK: Thank you.

24 VIDEOGRAPHER: Do we want this on the
25 record, or do we want to go off to record?

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1 MR. BECK: No, let's leave it on the record
2 for now.

3 VIDEOGRAPHER: Okay.

4 MR. SOPER: I mean, Bill, even if we start
5 at -- at 9:00 that's, what, five hours and 45 minutes?
6 How much time have we done today on the record?

7 MR. BECK: I don't think we have that
8 calculation yet, but let's give ourselves some comfort
9 zone. I don't want to come back a third day.

10 VIDEOGRAPHER: This is the videographer.
11 We -- we're getting close to three hours and 20
12 minutes of -- of on-the-record time.

13 MR. SOPER: I think that's plenty of time if
14 we start at 9:00 tomorrow. I mean, that's -- That's
15 five hours and 45 minutes so that's over nine hours, I
16 think, total if we go all day with no breaks so --

17 MR. BECK: Yeah. I was just trying to give
18 a little extra room in case you had any questions,
19 Jonathan.

20 THE WITNESS: You know, I can start at 8:00.

21 MR. BECK: Thank you. Let's start at 8:00,
22 and then hopefully we'll finish much earlier than we
23 planned to. Okay with you, Brian?

24 MR. WATSON: That works.

25 MR. BECK: All right. We can go off the

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1 record. Thank you very much. Talk to you all in the
2 morning.

3 VIDEOGRAPHER: Going off the record at
4 2:55 p.m.

5 (Whereupon signature was reserved, and
6 the deponent was excused.)

7 (The exhibits were retained by the
8 court reporter.)

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1 COMES NOW THE WITNESS, DR. HOWARD HU, and
2 having read the foregoing transcript of the deposition
3 taken on the 31st day of AUGUST, 2020, acknowledges by
signature hereto that it is a true and accurate
transcript of the testimony given on the date
hereinabove mentioned.

4

5

[DR. HOWARD HU]

6

7 Subscribed to before me this _____ day
8 of _____, 2020.

9

10

[Notary Public]

11

12

13

My commission expires: _____.

14

15

16

17

(DR. HOWARD HU VIDEO CONFERENCE AND TELEPHONIC
VIDEOTAPED DEPOSITION)

18

MARC CZAPLA AND JILL CZAPLA vs. REPUBLIC SERVICES,
INC., ET AL.

19

Reporter: Angela M. Taylor, RPR, MO-CCR, IL-CSR

Date Taken: AUGUST 31, 2020.

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1 REPORTER CERTIFICATE

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I, Angela M. Taylor, RPR, MO-CCR, IL-CSR, do
hereby certify that there came before me at video
conferencing and telephonically remotely,

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6 DR. HOWARD HU,

7 who was by me first duly sworn; that the witness was
8 carefully examined, that said examination was reported
9 by myself, translated and proofread using
10 computer-aided transcription, and the above transcript
11 of proceedings is a true and accurate transcript of my
notes as taken at the time of the examination of this
witness.

12 I further certify that I am neither attorney
13 nor counsel for nor related nor employed by any of the
14 parties to the action in which this examination is
taken; further, that I am not a relative or employee
15 of any attorney or counsel employed by the parties
hereto or financially interested in this action.

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Dated this 8th day of SEPTEMBER, 2020.

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19 ANGELA M. TAYLOR, RPR, MO-CCR, IL-CSR

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